A. R. E. A. CONVENTION PROCEEDINGS NUMBER

MARCH 21, 1942

Railway Age

McCARTNEY LIBRARY
GENEVA COLLEGE

DEDICATED TO *Liberty*

AMERICAN railroads are dedicated to SERVICE—service means VICTORY—victory means LIBERTY.

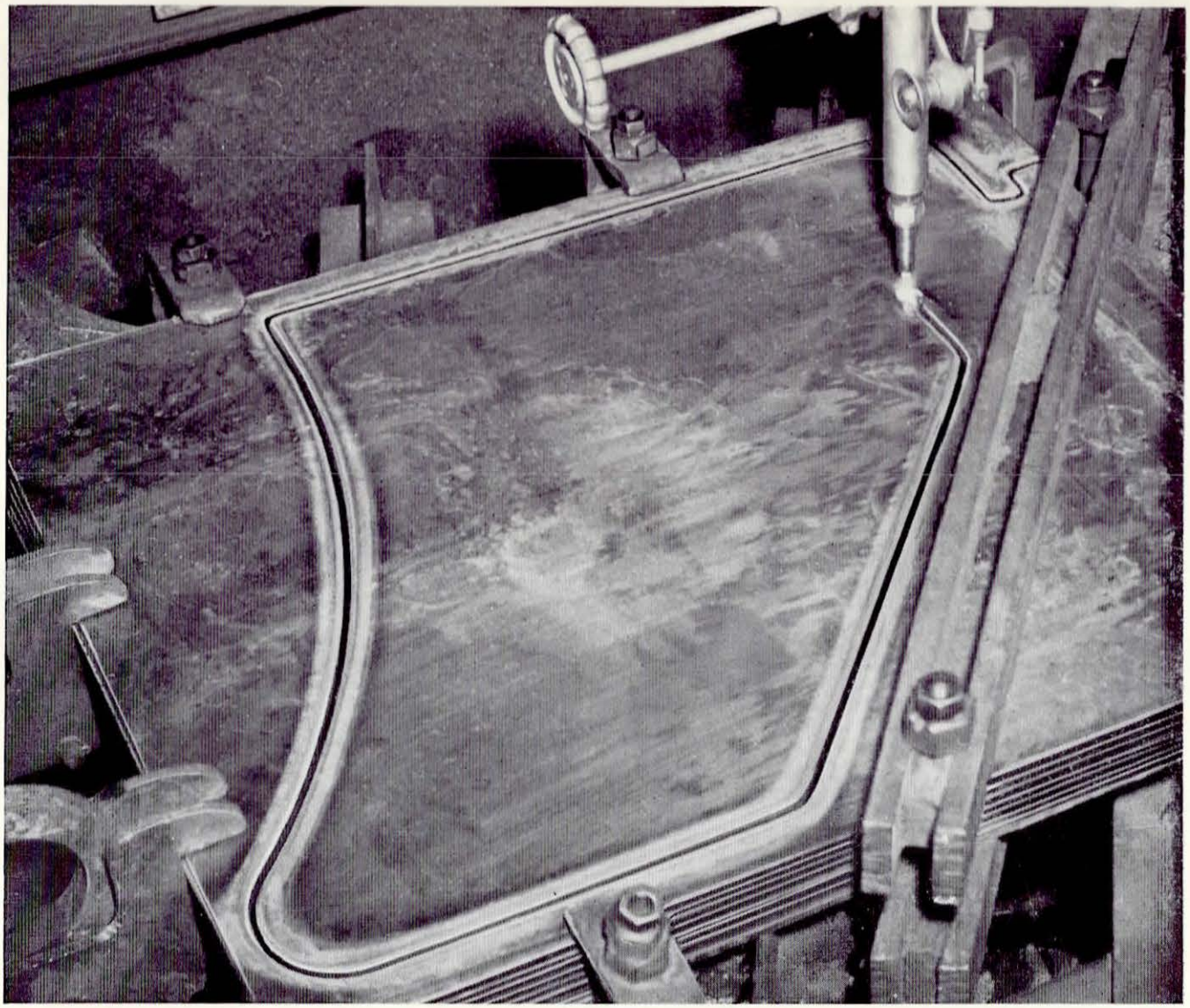
The heavy increase in traffic and the urgent need for uninterrupted fast service in moving men, materials and supplies impose demands heretofore unknown, requiring the utilization of every available unit of motive power. In meeting these demands, General Motors 5400 Hp. Diesel Freight Locomotives are providing:

- Increased hauling capacity.
- Greater availability.
- Reduction in train miles as much as 50 per cent.
- Release for other important services as many as five heavy steam locomotives for each Diesel locomotive operated.
- Faster schedules — fewer service delays.
- Increased carrying capacity of existing track facilities without expensive replacements with heavier rail or rebuilding of bridge structures.
- Conservation of vital materials — two tons of materials in a GM Diesel locomotive will do the work of more than two tons of materials in a steam locomotive.

WHO SERVES THE RAILROADS — SERVES AMERICA

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS CORPORATION LA GRANGE, ILLINOIS, U.S.A.



OXY-ACETYLENE FLAME-CUTTING..

For Fast Production of Essential Parts

• Many car and locomotive parts can be produced quickly as needed from rolled or forged steel by means of oxy-acetylene shape-cutting. Oxweld shape-cutting machines are guided by templets and produce parts with cut edges so accurate, clean and smooth that in most instances no machining is required. Parts of all sizes, shapes, and thickness can be cut—from heavy driving boxes or crossheads to light parts cut from tightly clamped piles of plate. The illustration shows an Oxweld machine cutting 16 coach vestibule step plates, 1/8 in. thick, in one operation. Oxweld instructors are prepared to demonstrate how railroads can use shape-cutting to produce the parts they need, rapidly and economically.

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation

Carbide and Carbon Building Chicago and New York

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The word "Oxweld" is a registered trade-mark of a Unit of Union Carbide and Carbon Corporation.

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 112, No. 12.

There is Magic in "Scrap"

Help Overcome the Critical Shortage!

Are you listening to America's call for scrap—scrap, the magic metal that can be melted and refined into steels for the fighting forces of America and her Allies?

Charging scrap into furnaces is not a new steelmaking method. It has been practiced for years, conserving millions of tons of valuable iron ore resources. Last year scrap collecting facilities made available 25,000,000 tons to help maintain the output of America's steel plants. The need is so urgent, however, that even greater effort must be applied so that all steelmaking furnaces can operate at full capacity.

Make a search for scrap throughout your plant. You may find discarded machinery, a rusty shaft, a broken rail, a twisted beam, an old boiler, an obsolete crane, an unused switch track, a steel trussed building too costly to repair and use. What about the "bone pile," where odds and ends have been rusting for years?

Possibly you can find only a few pieces of scrap, weighing only a fraction of a ton. **Start them on the way to a steel mill!** Your local scrap dealer, gathering a piece of scrap here, and one there, will soon fill a car. Carloads from other dealers will grow into a trainload. Trainloads arriving at mills will assure steel output at capacity.

Remember that 50 pounds of steel means another 105 mm. shell; 25 tons another tank; and, 25,000 tons will place a new cruiser and several cargo ships under the American flag.

Time and materials are precious to our men on the fighting fronts. Do not handicap them—answer America's call today—send your scrap to be refined into useful steel.

INLAND STEEL CO.

38 S. Dearborn Street, Chicago • Sales Offices: Milwaukee, Detroit, St. Paul, St. Louis, Kansas City, Cincinnati, New York

Adequate Transportation is VITAL

Sound Track Imperative for SPEED-ECONOMY-SAFETY

ANOTHER Spring is here. Soon your maintenance men will be striving to put roadbed and track in shape to handle an unprecedented volume of vitally important war-time traffic. Insist upon sound, high-quality track work — It's an investment that will return maximum dividends throughout the years to come — both in war and peace.

And, when you specify International Creosoted Ties, not only do you make certain that one factor of sound track construction has been amply provided for — you know also that for an indefinite period these quality ties will continue to function with incomparable durability.

Furthermore, similar economies are obtainable by the use of International Poles and Timber in the repair and construction of pole lines, trestles and wooden structures. International Quality will be meticulously maintained — it offers a valuable protection against inferior timber and defective preservative treatments.

INTERNATIONAL CREOSOTING & CONSTRUCTION CO.

PRODUCERS OF HIGH GRADE TREATED TIES, POLES, PILES, ETC.

Galveston — Beaumont — Texarkana

Electric drive permits shore control of new lift bridge

Electrical power provides speed, safety and flexibility for new lift bridge

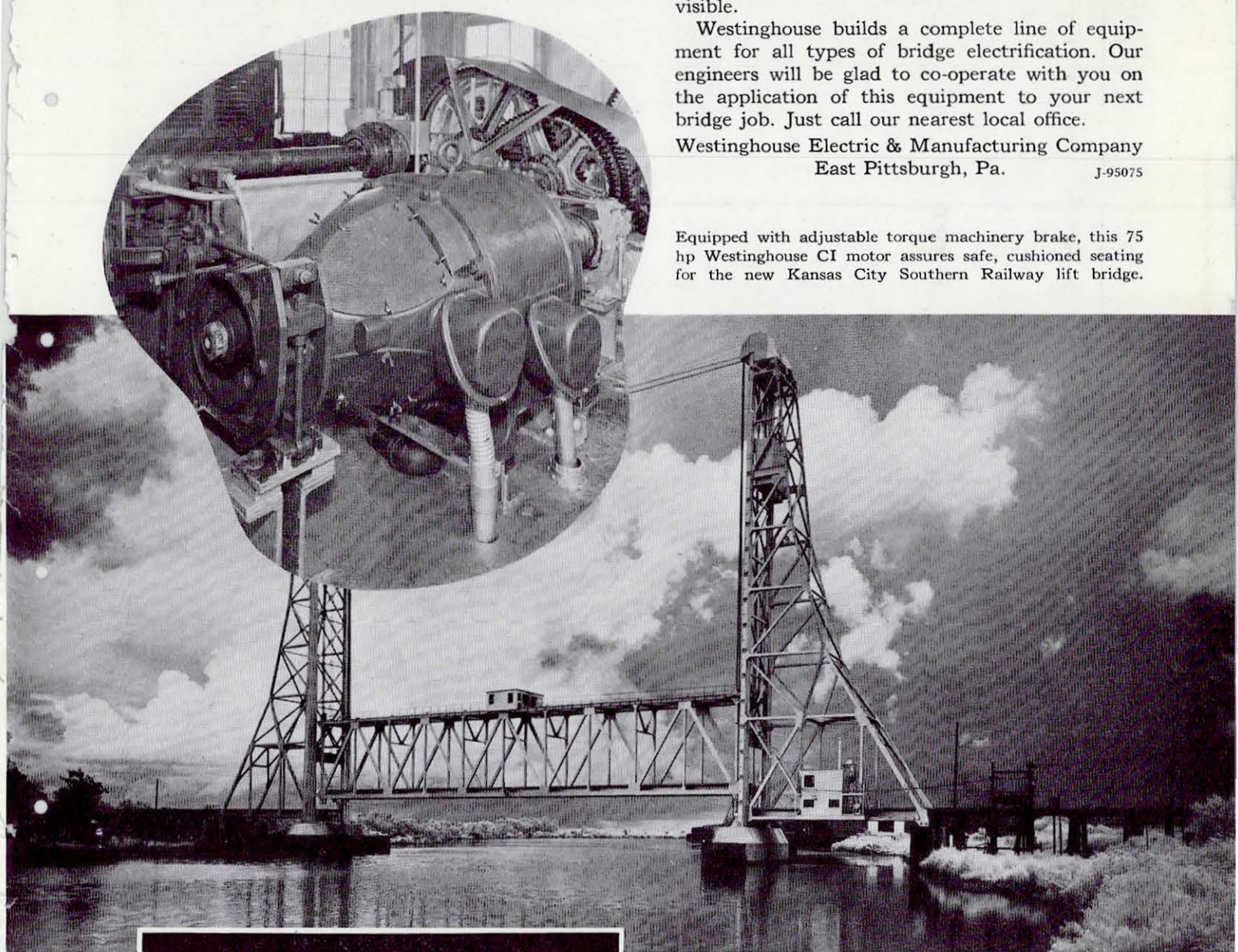
This recently completed Kansas City Southern Railway lift bridge over the Neches River near Beaumont, Texas, is another example of the advantages offered by electrical power for bridge operation.

A single 75 horsepower wound rotor Westinghouse motor lifts the 245-foot span 131.6 feet in two minutes and 45 seconds, providing a clearance of 153 feet above average water level. Operating safety and cushioned seating under all load conditions are provided by an adjustable torque machinery brake.

Westinghouse controls, specially designed for bridge operation, increase both the flexibility and safety of this new span. Controls are located on the shore instead of with the machinery on the movable span. This enables the operator to control action from a fixed, safe point at ground level. River, shore, bridge and ships are always clearly visible.

Westinghouse builds a complete line of equipment for all types of bridge electrification. Our engineers will be glad to co-operate with you on the application of this equipment to your next bridge job. Just call our nearest local office.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa. J-95075



Equipped with adjustable torque machinery brake, this 75 hp Westinghouse CI motor assures safe, cushioned seating for the new Kansas City Southern Railway lift bridge.

Westinghouse

Time saver for American Railroads

THE PENNSYLVANIA RAILROAD

SUMMARY OF ANNUAL REPORT FOR 1941

THE 95th Annual Report of the Pennsylvania Railroad Company covering operations for 1941 will be presented to the stockholders at the annual meeting on April 14, 1942. Operating revenues increased $136,447,755 or 28.6% over 1940. Operating expenses increased $104,222,597 or 30.8%. Taxes increased $22,274,360 or 50.8%. Net income was $52,383,958 an increase of $11,608,128. Surplus was $48,414,588, equal to 7.4% ($3.68 per share) upon the outstanding Capital Stock (par $50) as compared with 5.6% ($2.80 per share) in 1940.

OPERATING RESULTS	1941	Increases or Decreases Over 1940
Total Operating Revenues Were	$614,041,163	I $136,447,755
Total Operating Expenses Were	442,677,275	I 104,222,597
Leaving Net Revenue From Railway Operations of	171,363,888	I 32,225,158
Taxes Amounted to	66,159,548	I 22,274,360
Hire of Equipment and Joint Facility Rents Were	8,101,852	D 652,204
Leaving Net Railway Operating Income of	97,102,488	I 10,603,002
Income From Investments and Other Sources Was	*41,663,095	I 365,787
Making Gross Income of	138,765,583	I 10,968,789
Fixed Charges, Chiefly Rentals Paid to Leased Roads, and Interest on the Company's Debt	86,381,625	D 639,339
Leaving Net Income of	52,383,958	I 11,608,128
Appropriations to Sinking and Other Funds, etc.	3,969,370	I 90,205
Surplus	$ 48,414,588	I $ 11,517,923

**Includes dividend of $5,000,000 (par value) in securities received from Pennsylvania Co.*

Dividends aggregating 4% ($2.00 per share) were paid during 1941, compared with 3% ($1.50 per share) in 1940.

THE NATIONAL EMERGENCY

The railroads have again demonstrated their capacity and ability, under private management, to meet successfully and completely the demands made upon them by the National Emergency. The efficient performance has been well recognized.

During 1941 the freight traffic was greater than any previous year in their history and the passenger traffic was greater than any year since 1929. Although the ownership of freight cars was 600,000, or 26% less than in 1929, with a greater capacity of cars and locomotives it was possible, by continuous improvement in facilities and operating methods, to handle this large traffic without congestion or car shortage.

The railroads of the country are alert to their responsibility in the moving of men and materials so essential to our National Defense. The Company is participating with all its resources, including expenditures for improvements, towards producing the maximum of transportation efficiency.

FINANCE

The Company's net funded debt was reduced $12,947,970 during the past year. Equipment Trust Obligations increased $4,704,000 due to the issuance of $11,925,000 Fifteen-year 1¾% obligations, which were sold on a 1.744% basis to finance, in part, the cost of new equipment. This in turn was offset by the payment of obligations amounting to $7,221,000.

The System's funded debt in the hands of the public was reduced almost $30,000,000 through securities retired at maturity, bonds redeemed through sinking funds, and bonds acquired by System Companies.

Stockholders can obtain copies of the Annual Report from

EQUIPMENT

To meet the requirements of National Defense new equipment placed in service during 1941 included 4,954 freight carrying cars, 200 cabin cars, 3 locomotives, 41 large capacity tenders, 668 freight containers, 4 passenger coaches, 3 car floats and 1 tug boat. In addition 110 passenger train cars were remodeled. On order at the end of the year were 6,922 freight carrying cars, 250 cabin cars, 23 locomotives, 16 large capacity tenders, 14 passenger coaches, 10 car floats, 15 barges, 10 lighters, 1 tug boat and 1 track sweeper.

Capital expenditures were also made for additions to, and betterments of, roadway, structures and equipment, many of which were necessary in connection with National Defense.

In the 12 year period ended December 31, 1941, in addition to new and improved types of passenger coaches and dining cars, and remodeling and air-conditioning of passenger train equipment, more than 35,000 new freight cars and 336 locomotives of the most efficient type and advanced design were placed in service. There was also expended nearly $670,000,000 for additions and betterments to equipment, roadway, structures, and other facilities in the interest of improved service to the public.

This program of additions and betterments is indicative of the Company's efforts to be prepared to meet the defense needs of the country.

PASSENGER SERVICE

During the year, passenger services were further improved and three entirely new trains were added: (1) "The Jeffersonian", an all coach train operating between St. Louis and New York on a 20¼ hour schedule; (2) "The Patriot", operating between Washington, Baltimore, Philadelphia, New York, and Boston, with modern coaches, dining and lounge cars, and pullman sleepers, on an 8 hour, 40 minute schedule, the fastest service ever provided between Washington and Boston; and (3) "The Pennsylvanian", between Chicago and New York, affording the latest evening departure from Chicago with morning arrival at Philadelphia, New York, Baltimore and Washington.

In cooperation with its connections and other railroads in the Chicago-Florida passenger field, the Company participated in a comprehensive plan for full coordination of fast passenger service between Chicago and various parts of Florida, effective December 17, 1941, which resulted in substantial operating economies while at the same time affording the travelling public the fastest and most attractive sleeping car and coach service ever offered in that territory.

A number of other improvements in passenger train service were also effected, including further quickening of schedules of several through trains between the East and the West.

WAGES

During the year, demands were made upon the railroads of the country by the labor organizations for heavy increases in wages, and modification of working conditions, as a result of which the basic rates of pay of certain employes were increased 9½ cents per hour and 10 cents per hour for others, with certain additional concessions for paid vacations. On the basis of 1941 payrolls, the increased cost to the Company per annum is $38,000,000.

FREIGHT AND PASSENGER RATES

In addition to the wage increases which involved an increase of approximately $332,000,000 per annum in the operating cost of the railroads, the railroads anticipated, with the war on, increases in other expenses which would not be taken care of by the probable increase in volume. Thus, unless increased rates could be obtained, the railroad's efforts to continue to provide the adequate and efficient railroad transportation, made necessary by the war, might be seriously affected. The railroads of the country, including the Company, therefore, petitioned the Interstate Commerce Commission on December 13, 1941, for authority to increase freight and passenger rates, other than the special rates provided for the military and naval forces of the United States travelling on furlough.

Hearings have been held in this proceeding. The Commission on January 21, 1942, authorized an increase in passenger fares; and on March 2, 1942, authorized a slight increase in freight rates.

TAXES

Taxes amounted to $66,159,548, an increase of $22,274,360, or 50.8%. Of this $18,648,885 was chiefly due to larger income and higher Federal Income tax rate. Higher payrolls resulted in an increase of $1,812,474 in Unemployment Insurance taxes, while Railroad Retirement taxes increased $1,813,001.

All taxes require about 10.8 cents out of each dollar of operating revenue, equivalent to 10.1% ($5.04 per share, an increase of $1.69 per share) upon the capital stock.

The railroads continue to be the only form of transportation used generally by the public that provides its own right of way and terminals, pays for their maintenance, and in addition pays taxes for the support of Government.

STOCKHOLDERS

The Capital Stock of the Company, at the close of the year, was owned by 205,012 stockholders, the average holding being 64 shares. Information concerning the Company and its activities will be furnished stockholders upon request and constructive suggestions respecting the Company or its service are always appreciated and receive careful consideration.

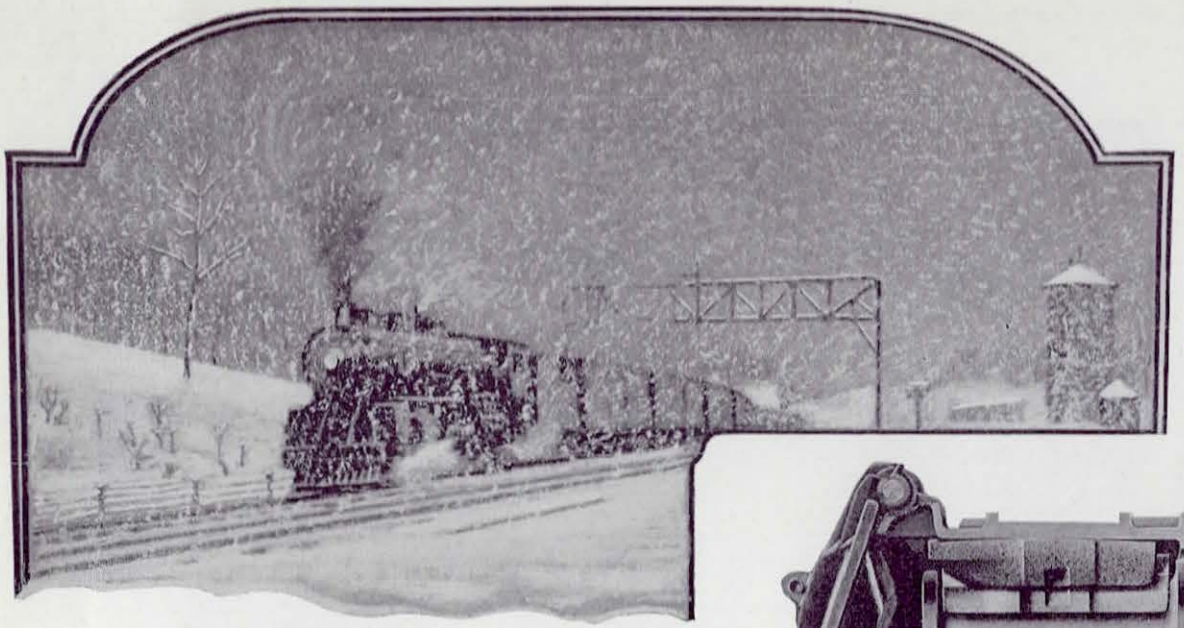
The Board takes pleasure in acknowledging the continued efficiency and loyalty of all the employes during this period of great national stress. We know that they will continue to do their full share in meeting the additional heavy responsibilities that have now been placed upon them.

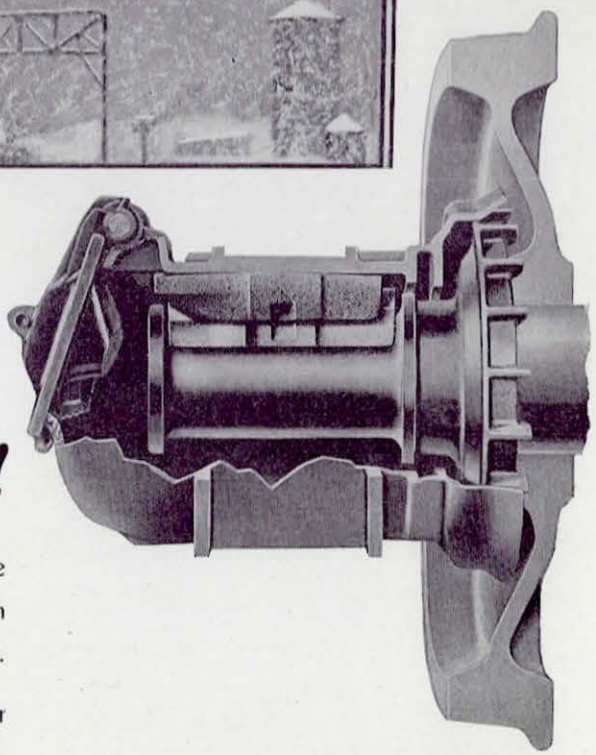
M. W. CLEMENT, *President*

THE PENNSYLVANIA RAILROAD

SHIP AND TRAVEL VIA PENNSYLVANIA

J. Taney Willcox, Secretary, Broad Street Station Building, Philadelphia, Pa.

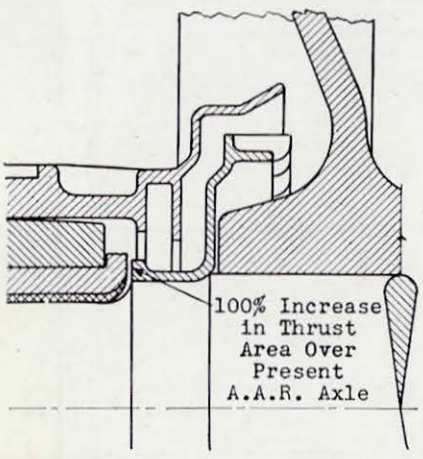




NO SOGGIE WASTE!

Weather conditions are no problem when cars are equipped with NATIONAL Journal Boxes with Deflecting Fans and NATIONAL center bearing lids.

They assure better journal protection all the year round.



Waste is kept cleaner, and condensation does not collect to destroy lubrication, as in boxes with the conventional type of dust guard.

Over five years of service has demonstrated that these boxes require repacking much less often, and provide better lubrication under all weather conditions.

Write for Circular No. 5139

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco

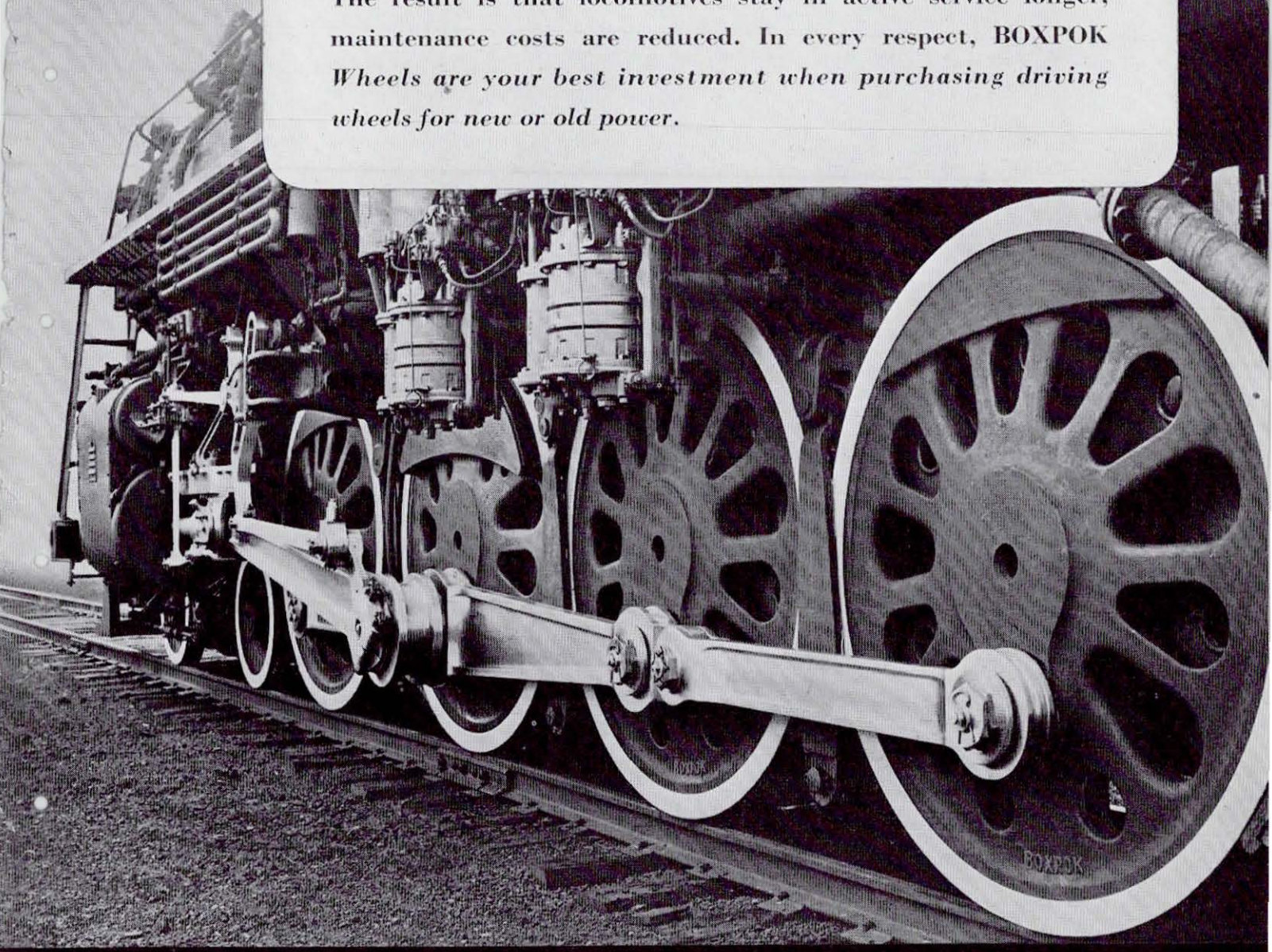
Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Get More Locomotive Tire Mileage With BOXPOK DRIVING WHEELS

THE box-section rim and spoke construction, and more uniform tire support provided by BOXPOK Driving Wheel Centers prevent out-of-round wheels and flat spots—wheels stay round—tire mileage is increased.

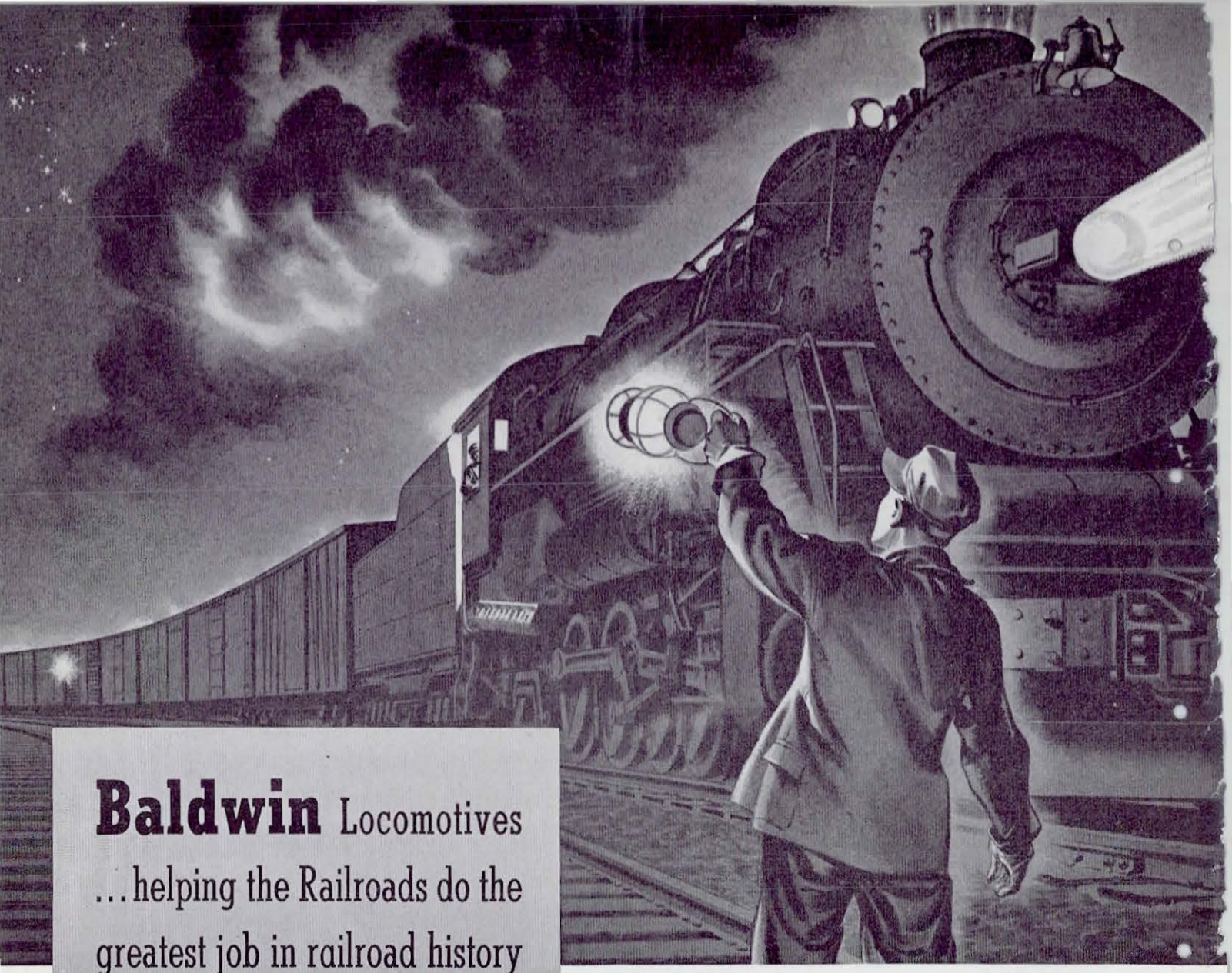
Lightness in weight and more effective counterbalancing permit higher speeds with less wear and tear on track and locomotive.

The result is that locomotives stay in active service longer, maintenance costs are reduced. In every respect, BOXPOK *Wheels are your best investment when purchasing driving wheels for new or old power.*



GENERAL STEEL CASTINGS

Eddystone, Pa. • Granite City, Ill.



Baldwin Locomotives ...helping the Railroads do the greatest job in railroad history

With America at war, more tonnage to be hauled faster, the railroads of the United States are making records never before equaled. They're doing it without fanfare, without major interruptions in regular scheduled runs.

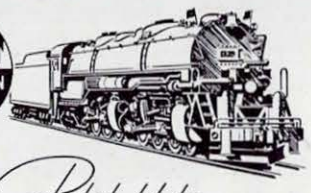
America has much for which to thank her railroads.

The increased efficiency of modern steam power has helped in this gigantic task. Steam locomotive performance has made its greatest strides during the past few years. Since the opening of the century, the horsepower output per ton of locomotive weight has been practically doubled. Yet the consumption of fuel and water per horsepower-hour has been cut in half.

Baldwin Locomotives have been a factor in bringing about the steady reduction in power costs. Baldwin has helped the railroads make railroad history since 1831.

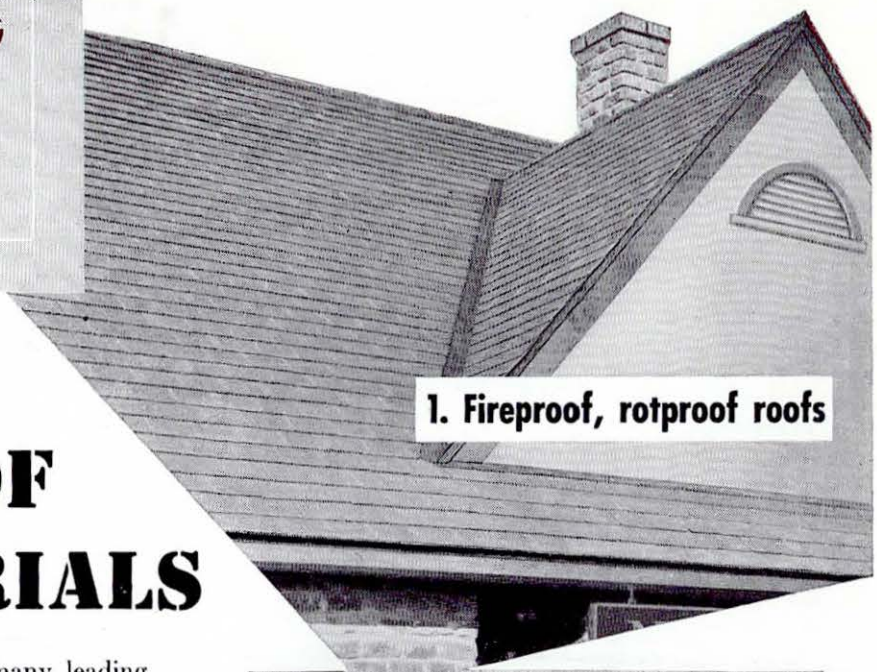
THE BALDWIN LOCOMOTIVE WORKS

BLW THE BALDWIN GROUP



Philadelphia

MODERNIZING STATION EXTERIORS?

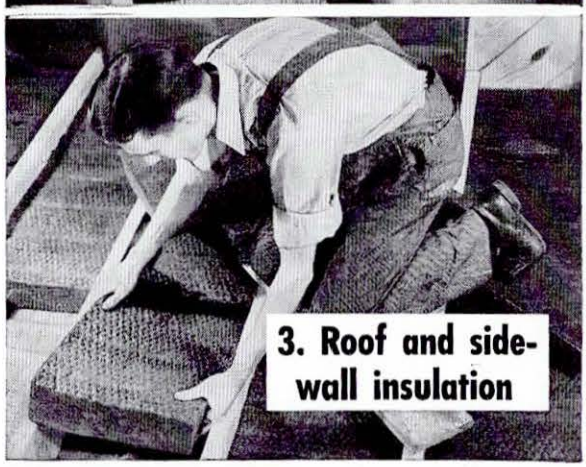


USE THESE FIREPROOF J-M MATERIALS

For exteriors that never grow old, many leading railroads are remodeling with Johns-Manville Building Materials.

Easily applied right over old roofs and sidewalls, J-M Asbestos Shingles provide the permanence, fire-safety and low maintenance of stone. J-M Rock Wool—mineral and imperishable—keeps buildings cooler in summer, cuts fuel bills in winter.

And for every other building-modernization need, J-M offers equally durable, economical materials. For information on these materials, and for suggestions on how to work out an efficient, low-cost modernizing program, write Johns-Manville at New York, Cleveland, Chicago, St. Louis or San Francisco.



J-M Materials for Station Modernization

1. J-M Asbestos Roofing Shingles can't burn or rot, never need paint for preservation. Can be applied right over old roofs. Based on past records, they assure more than 30 years' service with minimum maintenance.

2. J-M Asbestos Siding Shingles, made of asbestos and cement, offer lasting protection against fire, weather and wear. They are fireproof, unusually attractive and may be easily applied on new construction or over old siding.

3. J-M Rock Wool Insulation makes major savings on fuel bills . . . helps make buildings more comfortable the year round.

. . . and for interiors

J-M Asbestos Flexboard and J-M Insulating Board are ideal for walls and ceilings; J-M Asphalt Tile for floors. All are unusually durable, attractive and low in cost.

JOHNS-MANVILLE

84 YEARS OF SERVICE TO TRANSPORTATION

THE ORDER OF THE DAY

Full Speed

Full speed ahead in every shop, in every mine, in oil field and mill, in shipyard and on the farm. Full speed ahead in every heart and mind. Full speed ahead for Victory!

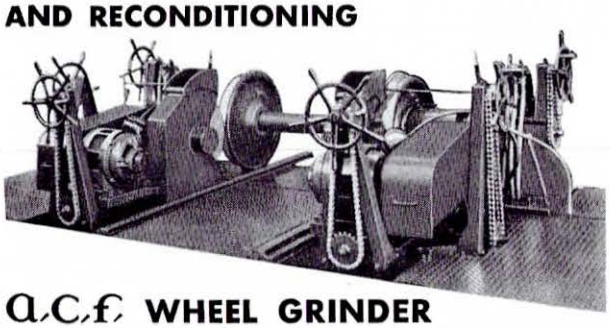
Magnificent has been the response of the American Railroads to this call . . . Full speed ahead! Each hour of the day and night they have sped the arming of this country's might by delivering more than twice as much transportation as they did in World War I. And already they plan to go even faster—more than 100,000 new all-steel freight cars within the year.

To this amazing record of the flow of freight A.C.F. has importantly contributed bigger freight cars, better freight cars, cars that can be loaded and unloaded more quickly, cars that can safely be run at higher speeds, cars that do more in less time—cars that fit the nation's needs *now* because of A.C.F. foresight in design and manufacture.

Despite our extensive war work, A.C.F. is going full speed ahead in building freight cars. A.C.F. will build these cars—and build them well—to serve wholeheartedly in carrying out the order of the day . . . Full Speed Ahead, America!

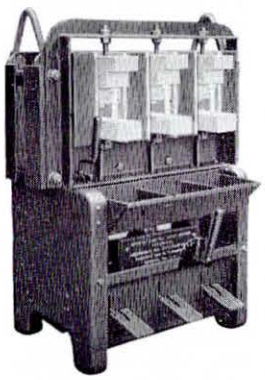
Ahead!

To Speed Up YOUR OWN REPAIRS AND RECONDITIONING



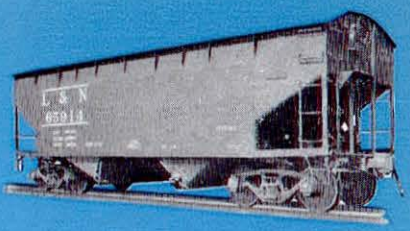
a.c.f. WHEEL GRINDER

Assures perfection in wheel mounting practice—provides, at production rate, mounted pairs of wheels with treads of identical circumference, concentric with the journal, and presenting a perfectly smooth surface for rail contact. This reduces train resistance, lessens vibration, cuts damage to fragile ladings, lengthens the life of wheels, trucks, brakes, and rails.



a.c.f. BERWICK ELECTRIC RIVET HEATER

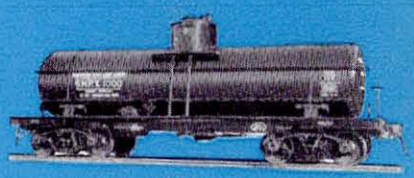
Saves 50% to 70% in heating cost—rivets reach their full heat of 1800° to 2000° in a few seconds—cuts waiting time and produces better rivets—11 to 20 kw.-hr. heats 100 lbs. of rivets—uses current only when rivets are heating. Available in 11 standard models, 2 to 6 electrodes, for rivets ¼" to 1½" in diameter, ¾" to 12" in length.



a.c.f. TWIN HOPPER CAR

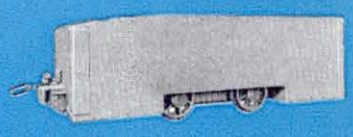
a.c.f. GONDOLA CAR

a.c.f. RAILWAY EXPRESS CAR



a.c.f. TANK CAR

a.c.f. COVERED HOPPER CAR



a.c.f. ELECTRICALLY WELDED MINE CAR

AMERICAN CAR AND FOUNDRY COMPANY

a.c.f.

NEW YORK • CHICAGO • PHILADELPHIA
ST. LOUIS • CLEVELAND • PITTSBURGH
ST. PAUL • SAN FRANCISCO

SPIKING THEIR GUNS!

American industry is busy today spiking the guns of the foes of freedom.

And in that job you can count the American railroads right up toward the head of the list.

They're hauling more tons more miles per day than ever before.

They're making every piece of equipment do more work than ever before—and are pouring earnings back into more equipment to do their job even better.

That's why we say, one of the biggest spikes in the Axis' guns will be a railroad spike.

They started this "war of movement"—and now they're going to find out what movement really means in the U. S. A.

* * *

APRIL P.S. PERFECT SHIPPING MONTH

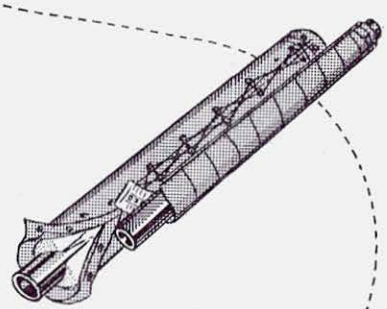
Good packing, secure loading and careful handling will conserve time, materials, money, and will help win the war. We can't afford waste now.

ASSOCIATION OF AMERICAN RAILROADS

WASHINGTON, D. C.

SOUND REASONING RECOMMENDS: Insutape & Wovenstone

Insutape and Wovenstone steam-pipe insulation are standard on a great majority of U. S. railroads for five basic reasons. First, high insulating efficiency; second, ease of application; third, economy of reapplication; fourth, they won't calcinate or shake down even under the most severe conditions and fifth, flexibility of application — they can be quickly and easily applied to elbows, tees, cross-overs, etc.



Insutape and Wovenstone are contributing to Railroading's gigantic war program by eliminating delays in schedules due to frozen pipes—by speeding up application time —by providing economy of reapplication. For further facts regarding Insutape and Wovenstone write for the new booklet "Something to Get Steamed Up About!"

UNARCO

UNION ASBESTOS & RUBBER CO.
310 S. MICHIGAN AVE., CHICAGO, ILL.

Insutape and Wovenstone: CONSERVE THE VITAMINS OF THE RAILROAD. . .THE **B.T.U.**

The Romance of Western Trails

RIO GRANDE
ROYAL GORGE
MOFFAT TUNNEL
SCENIC LINE OF THE WORLD

Westward into the mountain country completely isolated in a veil of formidable mystery, reputed to be impenetrable, pierced only here or there by some intrepid explorer whose reports were entirely inadequate; into the land of fuel, food and mineral, the treasure chest of a great nation, the source of all western rivers; into this land, without subsidy from government, territory or state, solely on private capital was builded the "baby road."

The "baby road" was so called because of the narrow gauge then adopted as an assurance of economy in building through the most precipitous mountain region within the confines of the nation and because the novelty provided relief from the difficulty of obtaining funds for the project.

Conceived solely by William J. Palmer, young Civil War General, The Denver and Rio Grande of 1870 was standardized by 1890 and now serves not only the region in which it was built but has become an important link in the short route to the Pacific Coast.

Industries which the General dreamed of and founded developed rapidly along its lines and one of Colorado's greatest soon began to serve western railroads with the all important steel rails.

The *Rio Grande* laid the first rail rolled by the Colorado steel mill—thirty pounders—in Animas Canyon in April, 1882. Sixty years later, 1942, the streamlined Prospector and army laden freight trains move with dispatch and precision over heavy duty rails still rolled in Colorado.

WON AT LAST!
THE BATTLE WITH THE MOUNTAINS
THE SCENIC LINE OF THE WORLD
CONQUERS ALL OBSTACLES
AND COMPLETES
ITS STANDARD GAUGE RAILROAD
ACROSS THE ROCKY MOUNTAIN RANGES.
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RAILROAD
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LEADVILLE · GLENWOOD SPRINGS · GRAND JUNCTION ·
SALT LAKE CITY AND OGDEN
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AND SAN FRANCISCO
ENJOY THE WONDERFUL ATTRACTIONS OF THE
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LUXURIOUS COMFORTS
NEW STANDARD GAUGE EQUIPMENT.

The Colorado Fuel and Iron Corporation
GENERAL OFFICES: DENVER, COLORADO

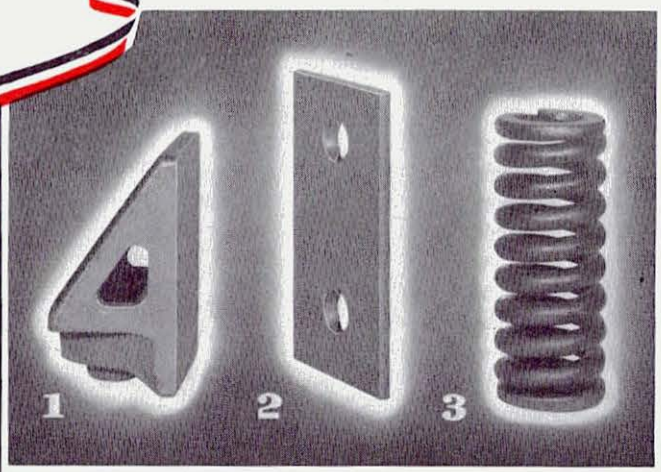
ONE OF A SERIES OF ADVERTISEMENTS FEATURING MAJOR RAILROADS OF THE WEST

What You Should Know About BARBER STABILIZED TRUCKS

CARS with Stabilized Trucks enjoy a smooth, easy ride under all conditions of load and speed. And the small cost of Stabilizing trucks for new and rebuilt cars is repaid many times over . . . in increased car life, greater car availability, reduced repairs, and considerably lessened lading damage.

Over 54,000 Car Sets Of Stabilized Trucks Are Giving Satisfactory Service On 43 Roads And Private Car Lines.

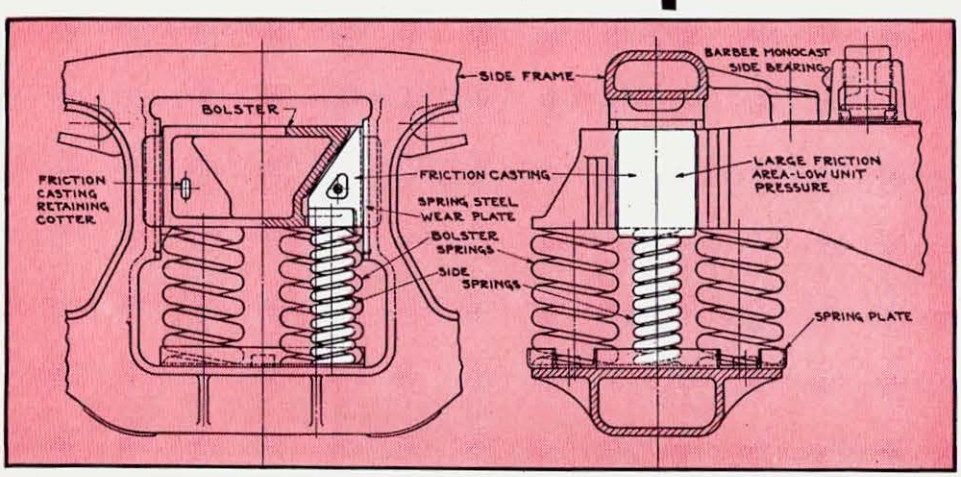
The Stabilized Parts consist of these large, sturdy, positive, friction elements.



1 Special alloy friction casting having 35 sq. inches of friction-bearing surface

2 Spring steel wear plate securely bolted to column

3 Friction-casting-supporting side-spring having a $\frac{3}{4}$" initial compression



The constant resistance of side spring to the load on the bolster creates powerful, friction-producing pressure in the up-and-down movement of friction casting against wear plate. This constant pressure produces a permanent tightness between bolsters and columns, which effectively controls the harmonic action of the group springs. Any slight wear that may develop is automatically taken up by the expansion of the side spring.

STANDARD CAR TRUCK COMPANY
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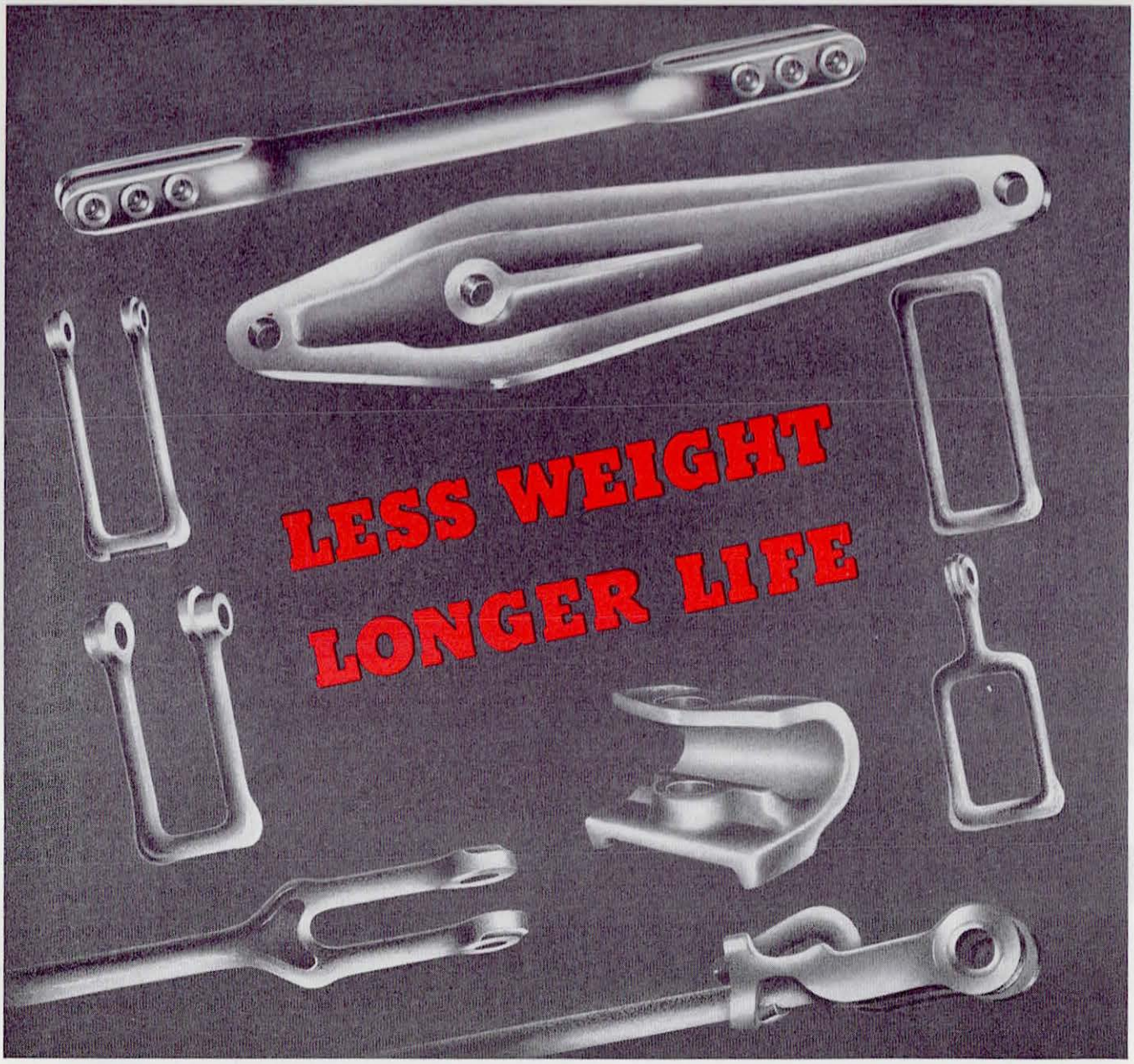

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more steel for active defense needs

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Up and up have climbed freight speeds to rival those of passenger runs. And with each increase have come more severe strains, heavier shocks, higher vibrations and more violent attacks by friction on operating parts of locomotives.

Add to these hardships of service the effects of sub-zero temperatures in winter, of extreme heat in the summer, and you get some idea of the "beating" that alloy steels in working parts must take.

Republic Alloy Steels can take it—and do—over long periods of operating time. They're made to take it. Because Republic—world's largest producer of alloy steels—has been making railroad steels for years and years—has worked closely with railroad engineers in developing better steels—knows from experience how to produce these steels and how to work them.

Republic metallurgists are at your service to help you—in the selection of the most efficient available steel for each use—in the forging, machining, welding and heat-treating of the steel into rods, pins, axles and other highly stressed parts.

Whatever your problem in steels—ask Republic for the answer.

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WHEN YOU CHANGE FROM STEEL TO *Wood Construction*

*U. S. Patent No. 2056688

● "Horse & buggy" days are not here again but it is certain that many structures and many kinds of equipment which have been made of steel will have to be made of wood "for the duration." Tanks for the process industries, storage facilities in industry as well as on the farm, can be built substantially of wood. Skids and platforms, roofing members, low buildings, including barracks—all these and many more can be of wood. Variable speed transmission units are made of wood. So are bridge structures. Wood is plentiful, relatively cheap, and is rapidly replacing steel in today's emergency. So when you change from steel to wood construction—you will need the proper kind of bolt to make a strong, weather-resisting, sturdy assembly. And bolts especially designed for wood construction are shown here—one of them of rapidly growing importance. This one is the patented Lamson **Weather-tight* bolt. It is the bolt shown with the tapered, splined shank, and the round, slightly convex head with the concentric ribs beneath the head. This bolt has features shared with no other bolt, viz: it prevents moisture entering the wood from either end of the bolt; makes a tighter assembly; needs no counterboring; will not turn in the hole when tightened; makes a positive factor of "safety-first." Although originally developed for use by railroad car builders, millions of Lamson **Weather-tight* bolts have been used during the past few years by many other industries. Be sure you are familiar with its advantages. Ask for folder describing it.

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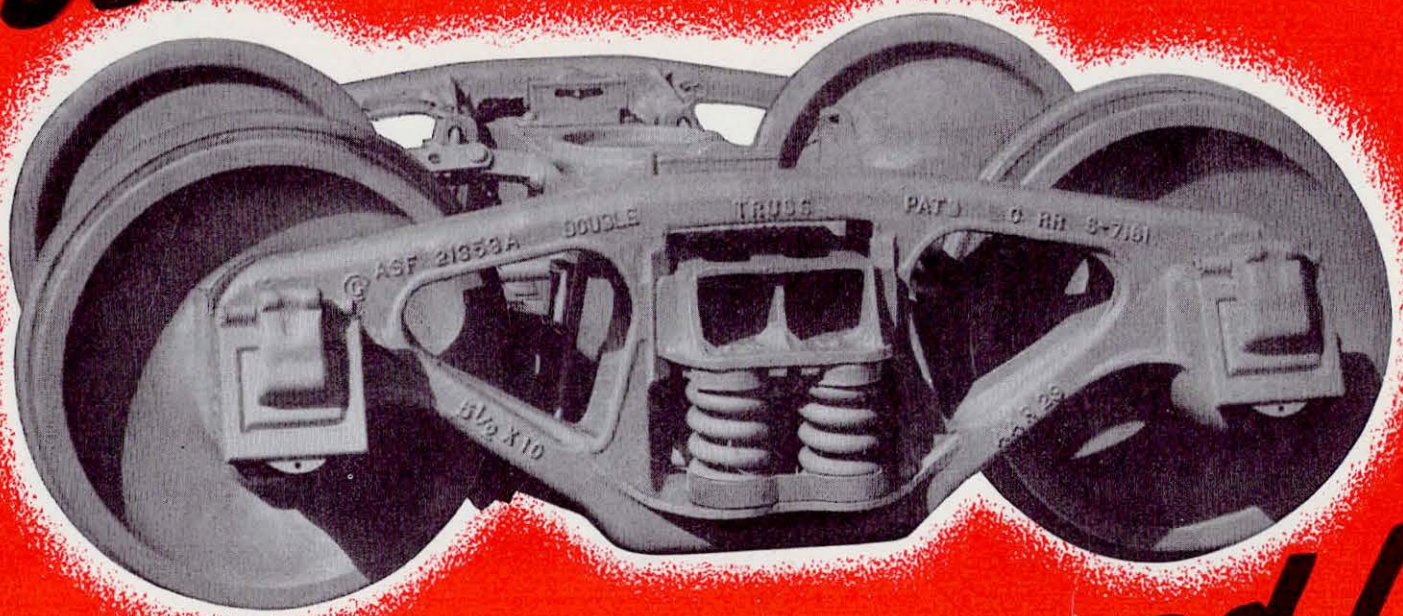

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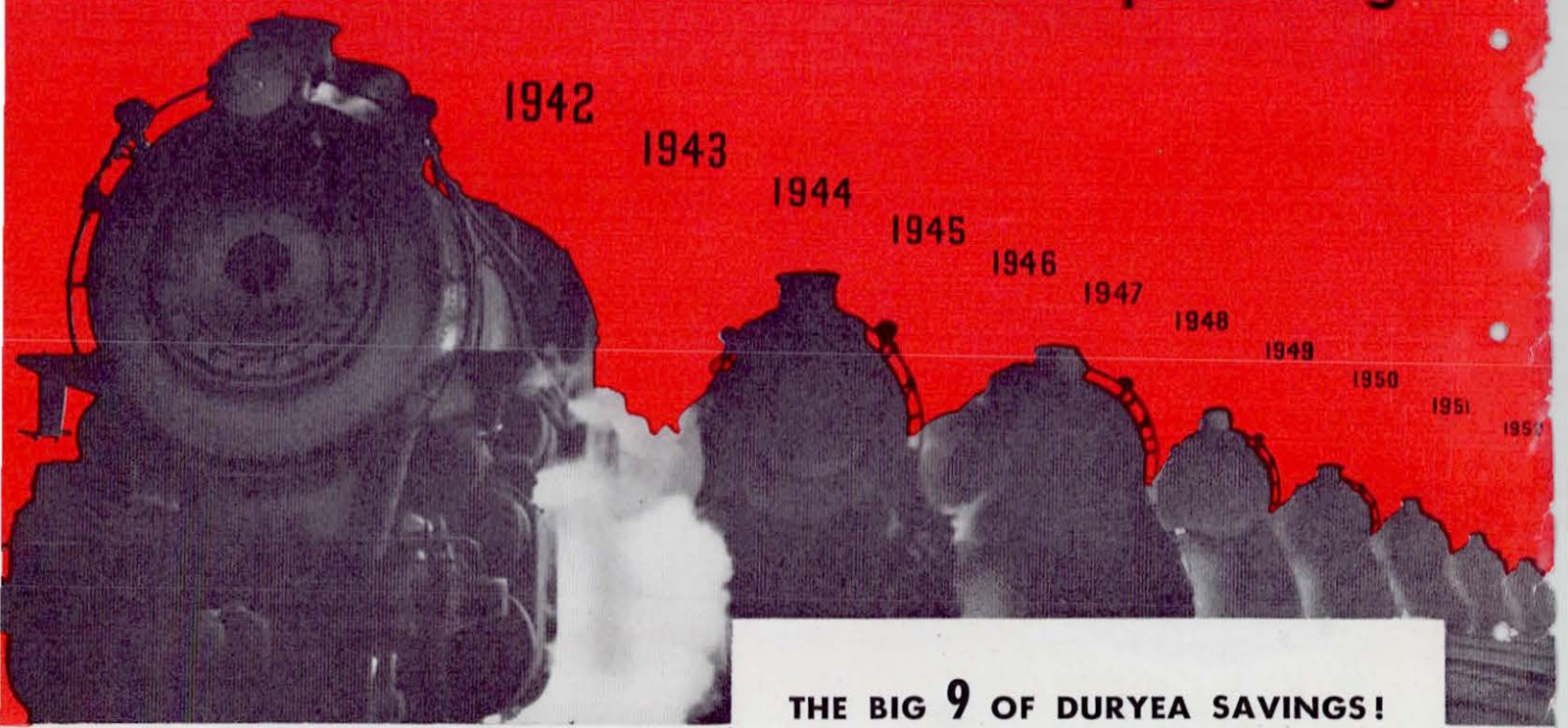
AMERICAN STEEL FOUNDRIES

DURYEA *Cushion* UNDERFRAME...

lasts entire life of car . . . never stops saving!



WHEN you specify the Duryea Cushion Underframe for a new freight car, your draft gear problem is solved for that car, *permanently*. With conventional draft gear, replacements are a necessity—but Duryea Cushion Gear lasts the entire life of a car, never sticks or loses its capacity.

By-products of DURYEA Protection

You save on inspection, parts and labor. You increase revenue by keeping cars in order and off the cripple track. And, due to greater shock-proof security, you have fewer damage claims and give better service.

Besides these savings, here are some of the *extra economies* you get with Duryea-Cushioned Cars:

- ★ Reduced packing and bracing requirements, permitting quicker dispatching of cars.
- ★ Longer life of couplers, striking blocks and other parts.
- ★ Elimination of hot boxes due to waste-grab.
- ★ No spacing blocks needed on twin or over-hanging loads.
- ★ No more loose center plate rivets.

Duryea Gears pay for themselves over and over again. The more you investigate Duryea-Cushioned Cars, the more savings you will discover. Get the facts. Write for illustrated booklet TODAY.

O. C. DURYEA CORPORATION, *30 Rockefeller Plaza, New York, N. Y. - Field Bldg., Chicago, Ill.*

DURYEA *Cushion* UNDERFRAME

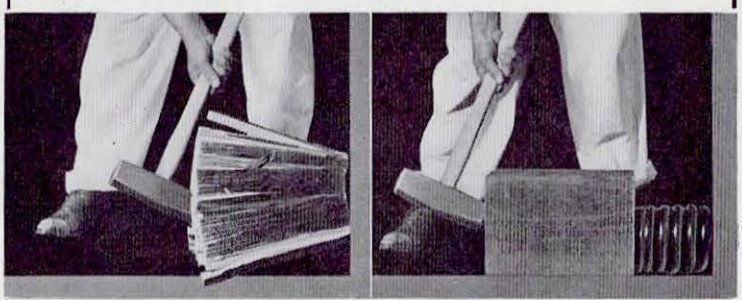
For Freight Cars

The Modern Safeguard For Shockproof Shipping

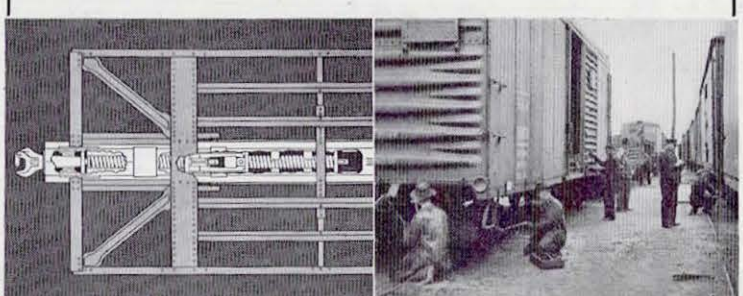
THE BIG 9 OF DURYEA SAVINGS!

Each Duryea-Cushioned Car will:

1. Minimize damage claims.
2. Avoid delays and tie-ups from gear failure.
3. Eliminate draft gear replacements on the car.
4. Reduce maintenance cost on every part of car.
5. Permit faster switching, and higher speeds.
6. Reduce slack to a predetermined ideal.
7. Keep off the "cripple track"—keep rolling.
8. Lessen danger of accidents to train crews by eliminating sudden jolts.
9. Create greater shipper goodwill.



HOW DURYEA CUSHIONING saves car and contents. Left: Block of wood (sill) placed against wall will splinter when hit with heavy sledge. Right: With spring allowing block (sill) to slide, hardest blows fail to cause damage.



PHANTOM VIEW shows construction of Duryea Underframe, with floating center sills and giant cushioning springs. Duryea Cushion Gears always function at full efficiency.

MR. RAILROAD OFFICIAL! The Duryea Underframe saves money—can be supplied by any car builder—costs little—pays for itself quickly. Why not investigate for your road?

It's up to American Industry

From all over the world, frightened, helpless eyes peer through the mists of war toward American smokestacks. *Will children die of hunger? Will rifles in men's hands have bullets? Will the air above them swarm with friendly planes . . . or hostile?* It's up to American industry.

Because Koppers cuts across the whole American industrial scene like a common denominator, every new job for American industry puts fresh responsibilities on Koppers and some Koppers product.

Ships gliding down the ways with the hopes of civilization clinging about their bows, have been speeded into the service with bronze propellers from Koppers foundries. The plane soaring protectively above you probably has Koppers piston rings. The carriages of the anti-aircraft guns that rumble comfortingly past on their way to the coast were possibly built by Koppers.

Beneath all these, at the very roots of almost every one of the herculean tasks American industry is performing, is that great storehouse of energy—*coal.*

Koppers is mining vast quantities of coal for fuel. Koppers coke ovens are transforming much of that coal into coke, gas and the flood of other products which eventually mean munitions, drugs, plastics, synthetics, rubber and other indispensables.

With the lives of boys from your home and our homes at stake . . . and the hopes of engulfed nations in the balance . . . every word from an American factory becomes the world's greatest news story. It's up to American industry. Koppers Company, Pittsburgh, Pa.

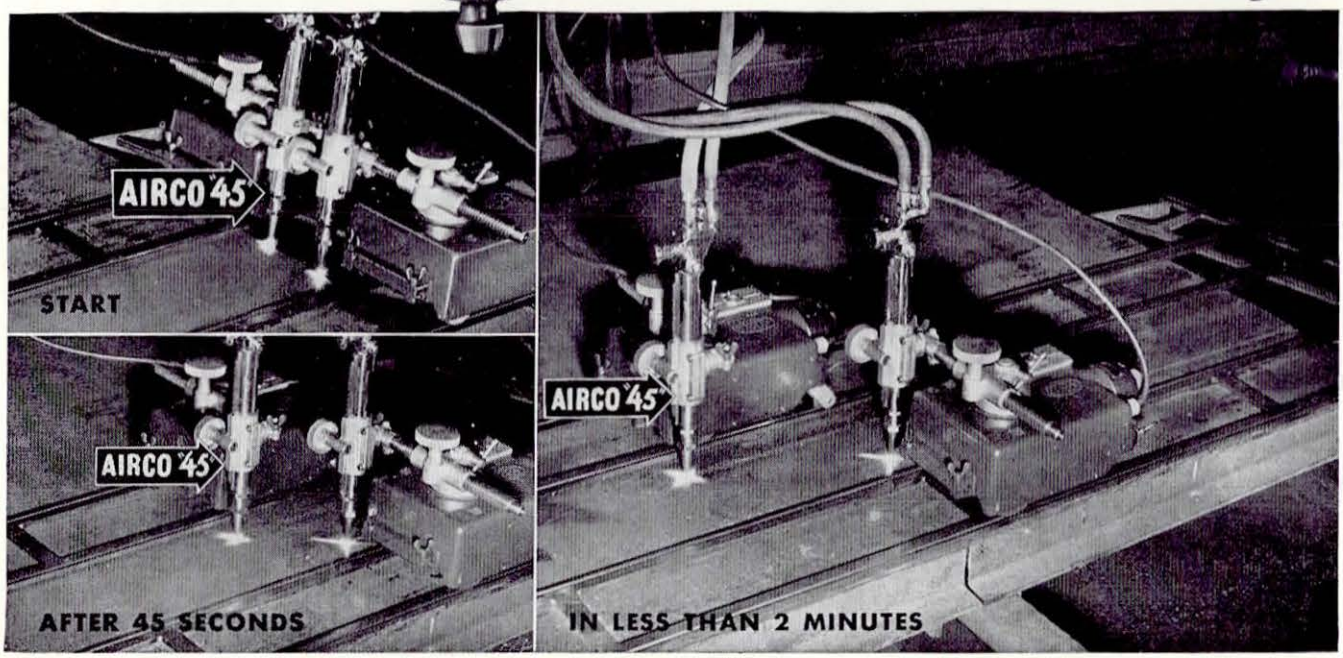
KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

BUY UNITED STATES DEFENSE WAR BONDS AND STAMPS

VISIBLE EVIDENCE

Gives 20% to 30% Faster Cutting!



Here's a race that proves you can save precious production hours by use of the new Airco "45" High Speed Machine Cutting Tip. Both of these cutting torches, mounted on Airco Radiagraphs, started cutting this heavy steel slab together. But at the end of 45 seconds, one cutting machine is far ahead of the other—the machine equipped with the Airco "45" High Speed Tip. Measurement of the lead taken by the Airco "45" equipped machine in a little less than two minutes proves that this tip cuts 20% to 30% faster than the standard cutting tip.

The Airco "45" tip, developed at a time when greater production is a critical need of the war effort, has a nozzle with a divergent exit portion — a design that makes it possible to eject a narrow, high velocity stream of cutting oxygen. As a result of burning a narrower cut, or kerf, the Airco "45" cuts faster and more economically. In order to obtain these higher speeds, oxygen pressures of from 85 to 125 psi must be used.

Put your machine gas cutting operations in high gear with Airco "45" High Speed Machine Cutting Tips. They are at present available in sizes to cut metal up to 8 inches thick.

*Method Patent No. 1985080

Air Reduction

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AIRCO WILSON

SERVING RAILROADS FROM COAST TO COAST

PAGE 6 ★★★

GRADE CROSSING ACCIDENTS INCREASING AT ALARMING RATE

says Mr. W. W. Jeffers, President Union Pacific Railroad

YOU ARE RIGHT MR. JEFFERS

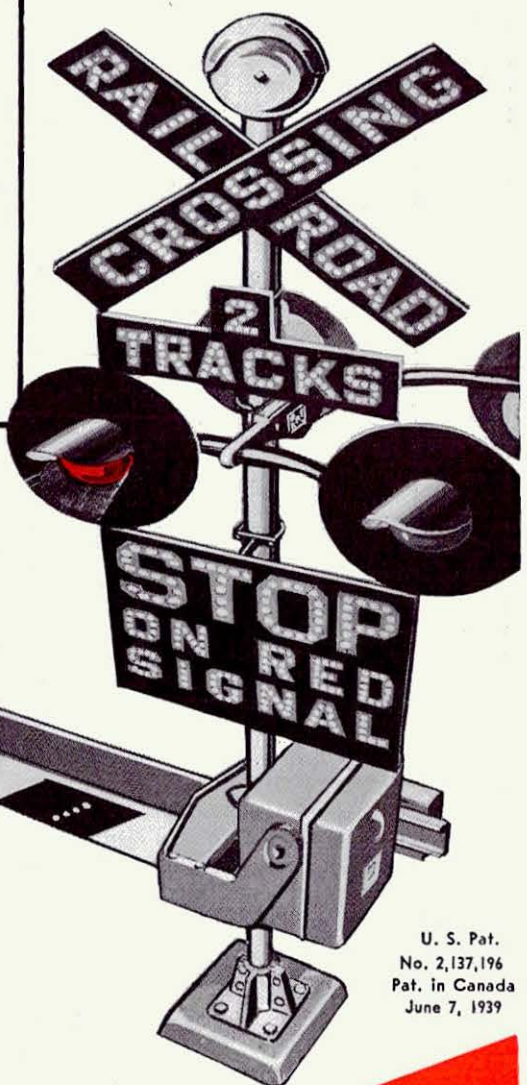
IN YOUR PLEA TO MOTORISTS TO USE MORE CAUTION

If MOTORISTS WOULD **STOP** AT ALL CROSSINGS

If THEY WOULD **LOOK** IN BOTH DIRECTIONS BEFORE ATTEMPTING TO CROSS —

If THEY WOULD **LISTEN** FOR AUDIBLE WARNINGS

THERE WOULD BE NO CROSSING ACCIDENTS EVER



FOR THE *Defense*

. . . AND PROTECTION OF HIGHWAY TRAFFIC AND RAILROADS HAULING EXPLOSIVES, WAR MATERIALS AND TROOPS . . . *Consider*

W.R.R.S. MODEL 10

Automatic Crossing Signals

U. S. Pat. No. 2,137,196 Pat. in Canada June 7, 1939

THEIR UNPARALLELED *NO ACCIDENT RECORD ALSO IS WORTHY OF YOUR CONSIDERATION

NOW MORE THAN EVER AUTO-TRAIN COLLISIONS MUST BE AVOIDED

*OVER 1360 MODEL 10 SIGNALS REPRESENT IN EXCESS OF 900 CROSSING-YEARS OF SERVICE WITHOUT ONE SINGLE TRAIN-AUTO COLLISION.

WESTERN RAILROAD SUPPLY CO.

GENERAL OFFICES AND FACTORY
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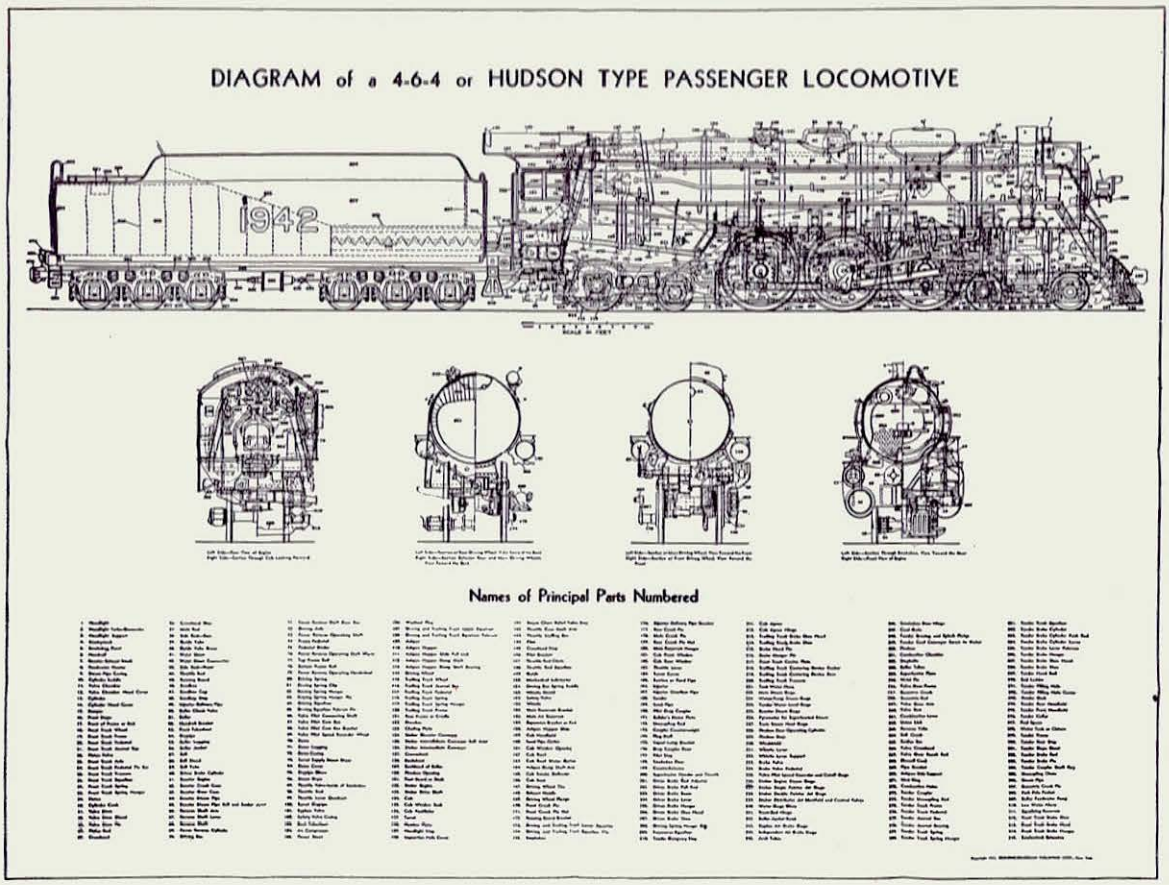
CHICAGO, ILLINOIS

New Wall Chart



This new chart of a 4-6-4 Hudson Type Passenger Locomotive is ideal for framing as a wall chart or for a glass top desk. It shows 315 numbered parts, including all the latest locomotive appliances. Elevation scale drawings of locomotive and tender, and four cross sections of the locomotive show all important details. Printed on heavy part-rag paper which will not discolor, it will stand hard use. It can be mailed flat or folded for a 10″ x 12″ file.

1941. Flat, 40″ x 20″; folded, 9″ x 12″, $.50

LOCOMOTIVE AND TENDER DEFECT CHART

This chart, which is now available either flat or folded, shows a 4-6-4 Hudson Type locomotive with 199 numbered parts. In the text these parts are named and the I.C.C. regulations covering them are explained, followed by the number of the rule. The absence of a rule number implies that no particular rule covers the part or appliance, in which case the general rule covering defects applies.

1939. Flat, 36″ x 24″; folded, 6″ x 10″, two-colors, coated paper, $.50

Chart of 2-8-2 Mikado Freight and of 4-6-2 Pacific Passenger Locomotive

Elevation and four cross section drawings with 308 numbered parts.

1920. 15″ x 22″; folded to 11″ x 7½″, $.15

I.C.C. Defect Chart of a 2-8-2 Mikado

Elevation drawing of locomotive and tender with defects to be looked for by I.C.C. inspectors numbered for reference to U.S. Regulations.

1920. 34″ x 22″; folded to 8″ x 9″, $.15

Anatomy of a Standard Double-Sheathed Steel-Frame Box Car

Shows seven views of the car and of various sections with 153 parts numbered and named.

1930. Flat, 28″ x 24″; folded to 8″ x 13″, $.15

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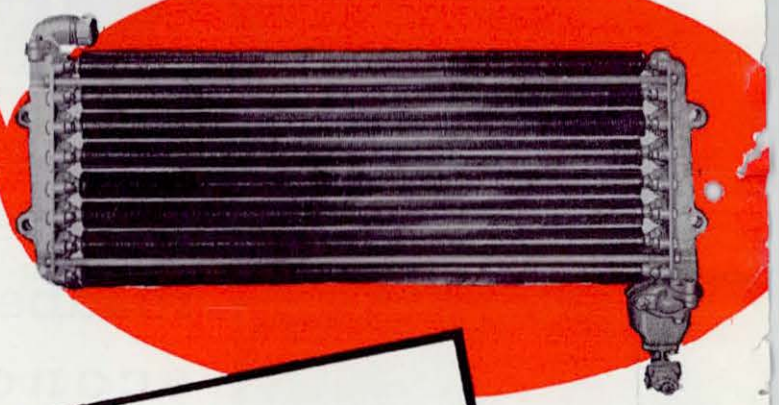
...Train Delays CAN BE Avoided BY...



Keeping Moisture Out of the BRAKE SYSTEM

This AFTERCOOLER Does the Trick

Continuity of train service is vital today, and reliable brake operation even more important than ever before. However, consistent performance is sometimes difficult to realize if free water is permitted to enter the brake system. • This difficulty is removed by our radiator type Aftercooler, having automatic drain valve. It eliminates involved piping, conserves space, and can readily be located in the path of natural air currents. Its merit as an efficient means to assure dry air for the brake system has been demonstrated by many noteworthy installations. Here is one typical example • A certain railroad was having trouble with freezing in brake apparatus on some of their heavy duty locomotives that haul tonnage trains over mountain grades. They installed an Aftercooler on one of them. Moisture troubles disappeared, brake integrity improved, train delays were reduced. Eleven other locomotives of the same class are now being equipped with Aftercoolers!

WESTINGHOUSE AIR BRAKE CO.

WILMERDING, PENNSYLVANIA

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 112 March 21, 1942 No. 12

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The Car Man's Part in Winning the War . . . . . Page 578

An abstract of a paper by R. K. Betts, Foreman Car Repairs of the Pennsylvania, in which he sets forth the points needing tightening up in conditioning freight cars and the importance of adequate inspection and repairs before loading.

Engineering Officers Study Demands of War Traffic . . 588

A comprehensive report on the proceedings at the forty-third annual meeting of the A. R. E. A.—containing abstracts from the principal addresses and reports submitted.

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A list of the members of the National Railway Appliances Association participating in the display of latest developments in equipment and materials held in conjunction with the A. R. E. A. convention.

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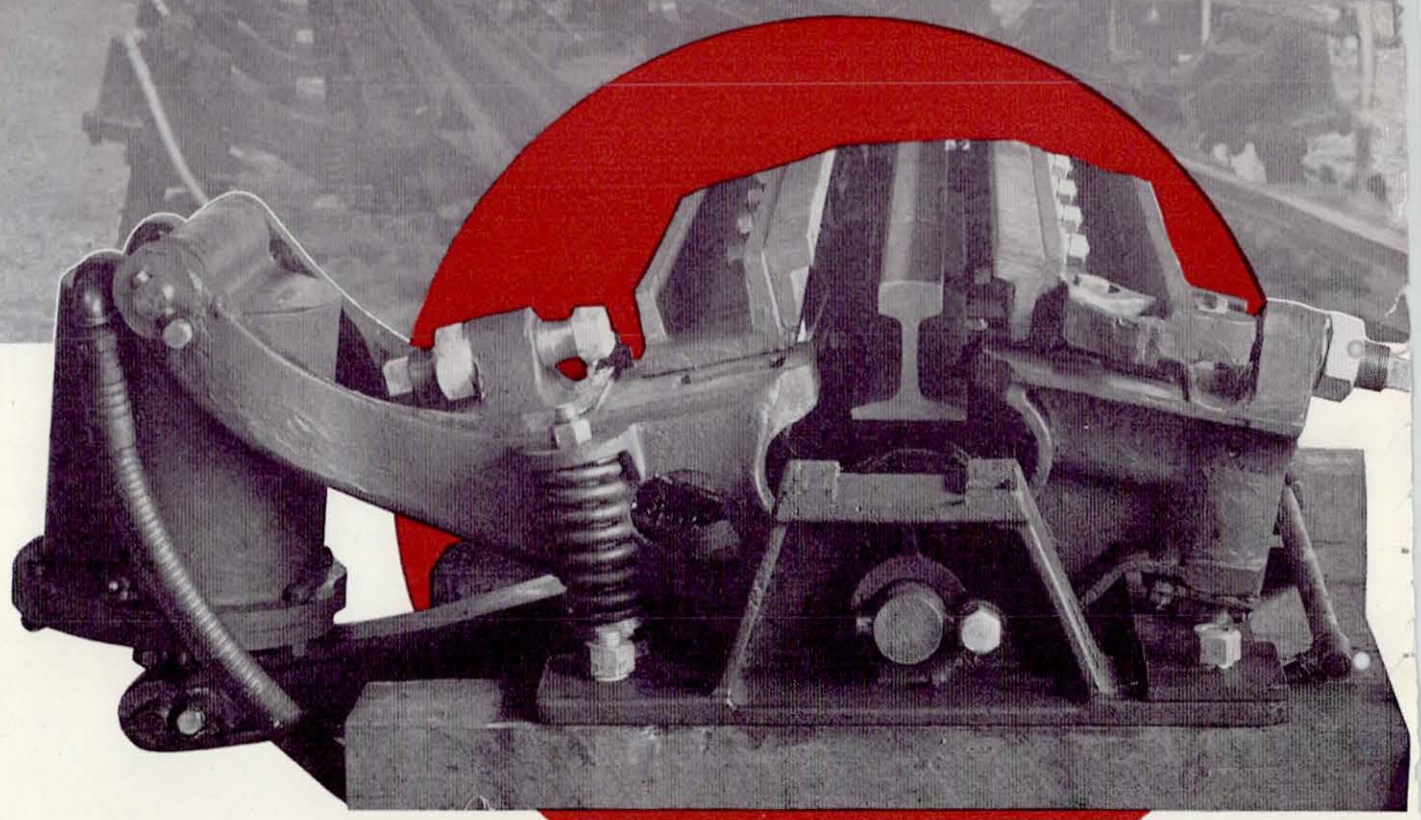
Increase Speed of Classification with A MODERN RETARDER



USE of the Model 31 retarder at classification yards equipped with earlier types, will insure increased speed in humping and classifying cars. Because of its greater power and flexibility of application, a rearrangement of layout is usually practicable which will further improve classification yard operation.

The unit construction of the Model 31 retarder permits single or double rail retarders to be made up in any desired length for application to tangent or curved track. It is universal in application, as the same parts and assembly may be applied to either a right-hand or a left-hand rail without change, and the control valve and operating cylinders can be located on either side of the track.

In addition to speeding classification, the Model 31 retarder will increase the savings now being made. Fewer retarders will be needed to do the same work and maintenance costs will be reduced to a minimum. Operation of small sections of a complete retarder may be suspended temporarily to facilitate maintenance attention without interruption of yard activity.

All parts are readily accessible for inspection and maintenance and only a few parts are required for stock to meet any replacement emergency.

Our nearest District Office will be glad to furnish any desired information. » » » » » » »

2024

UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA.

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The Week at a Glance

OPA STAGES BLITZ RAID: The OPA did not object to the freight rate increase when hearings were being held by the I. C. C. Just five days before the decision was to go into effect, however, these classroom "experts" came rushing breathless up to the commission and the railroads with a sudden discovery that the rate increase would "disrupt" their "price ceilings"; and hence demanded that increases on about one-fifth of the list of commodities be forthwith rescinded. The carriers replied, in effect, that the OPA was not empowered by law thus to repeal the Interstate Commerce Act and to jeopardize adequate railroad earnings by bum's-rush action—especially when it had neglected to make any such contentions when given ample opportunity to do so. The I. C. C. response to the OPA was a short but polite "No."

●

WHAT ARE ITS MOTIVES?: Left for speculation is what prompted this unsuccessful raid by the OPA—and whether there is any basis of truth in its contentions. The leading editorial herein examines both questions. On the latter, it is pointed out that the freight rate increase would result in a rise in the delivered price of most of these commodities of less than one per cent—whereas prices of some of these products have risen as much as 40 or 50 per cent since there has been any change in freight rates. Besides, the OPA strains at the gnat of miniscule freight rate increases while it has, right along, swallowed the camel of pyramiding wage rates. Is the OPA really trying to control prices, or does not the evidence suggest, rather, that its primary interest is in trying to prevent private enterprise from earning a living?

●

LOOKING FOR A GOAT?: When the rate case was being heard, the railroads agreed to negotiate with the OPA on adjustments required to harmonize the rate structure with the government's price program—a concession which certainly did not imply that "negotiation" meant rescinding a major part of the increases. However, the OPA made no attempt to negotiate. It went to the I. C. C. with its request to call off the increases *before it said anything to the carriers at all*—and, when it did approach them, it was in the spirit of pulling the pin on them, not negotiating. Could it be that the OPA knows its price control program is going to flop—because of its tenderness of wage rates—and that it is building up a "record" so its failure can be blamed on freight rates?

●

HIGH COURT ON REVAMPING: What the law is with respect to railroad reorganization will become clearer when the Supreme Court passes on several petitions now before it, that it review decisions of lower courts in contested railroad reorganization cases. There are three such cases now before the high court, which must also decide whether it will hear further the Washington Terminal "feather-bedding" case, wherein an Appeal Court showed no disposition to grant relief from this uneconomic practice.

●

SHASTA LINE OPENED: One of the heaviest and most interesting railroad construction jobs in many a year—the 30-mile line change of the Southern Pacific, on its Shasta route from San Francisco to the Pacific Northwest—was opened to service on March 15. The job required 12 tunnels, 8 major bridges and nearly 6 million cu. yd. of grading. The old line has not been abandoned yet, but will be continued for the time being in limited service. Several descriptive articles have been published on this project in our pages, the most recent being on June 14, 21 and 28 last year.

●

WHAT HAVE THEY TO HIDE?: The labor organizations appear to be unanimous in their opposition to Congressman Vinson's bill to require unions and trade associations to file with the Commerce Department annual statements of their receipts and expenditures, assets and liabilities, and the names and salaries of their officers. Such statements—and even more elaborate ones—have long been required of business corporations, without doing any noticeable harm to the honest ones. The unions advance more or less specious reasons for their opposition—which, however, would apply with equal force against publicity for corporation affairs. Their real reasons will, quite likely, suggest themselves to those who have read Westbrook Pegler's reports of union financial practices, particularly those covering compensation of union officials.

●

JUSTICE, 1942 MODEL: As we go to press the momentary expectation is that the government is about to take over the T. P. & W., following President McNear's refusal to arbitrate his union difficulties on terms laid down by government agencies which some might consider, not without cause, as slightly off the dead center of even justice when dealing with union interests. No fact-finding board was appointed in this case, as the law provides—possibly because persons with political influence would be embarrassed if the details of "feather bedding" were thus publicized.

●

VIOLENCE HERE & ABROAD: The authorities have insisted that McNear agree to arbitrate, which is not required by law, and have represented him as "defying" the government. Effective steps to prevent violence against the property and its employees have not been taken—which is the only reason that it is not able to operate normally despite the so-called "strike." Government officials, while apparently going *ultra vires* to tell McNear where to head in, have consistently refused to listen to his side of the case. This country is conducting a noble crusade to bring to all the peoples of the earth the rule of law, replacing arbitrary power and violence. One might deem this an especially opportune time for scrupulous practice of these principles at home.

TANK CAR WHEELS SPIN: More than one-fourth of the *normal* petroleum requirements of the Atlantic seaboard are moving into that area by tank cars. The unprecedented daily quantity of 435,086 bbl. (the March 7 figure) the railroads are hauling into this zone—has pleasantly flabbergasted the Petroleum Co-ordinator. Some of the details of this movement and how it is being accomplished are set forth in an article elsewhere in these pages. As long ago as December, the tank car fleet turned out 170.6 million car-miles—an increase of 33 per cent over 1940. Many devices have been used to keep the wheels turning—movement in blocks of both loads and empties being one. Last fall skeptics doubted that the carriers could move 200,000 bbl. daily. They are now heading toward tripling that "impossible" figure.

●

BETTER PRIORITY RATINGS: Materials needed for emergency railroad repairs will hereafter get an A-1-a priority, according to a St. Patrick's day announcement by Industry Operations Director Knowlson of the WPB. More important maintenance and operating materials are rated A-3 and less strategic stuff A-8. Heretofore all of it was A-10. Car and locomotive materials under P-8 and P-20 will continue to come through till April 30, but builders are expected henceforth to get this material by direct quarterly allocation. The details of this encouraging improvement are given in the "Equipment and Supply" columns herein.

●

KEEPING CARS IN SERVICE: A practical car man has a paper, published in this issue, which outlines some of the things a competent car man can do to help his country win the war. Among several helpful suggestions one that stands out especially is his appeal for experienced men to help newcomers learn their jobs.

●

A WAR OF TRANSPORTATION: In a short impromptu speech at a meeting of the Economic Club of New York this week, Wendell Willkie said that this was already recognized as a "war of production." However, he went on to say, it is more than that—more than any other war in history, it is also a *war of transportation*. Great progress has been made in getting the people to appreciate that the man at the lathe is as much a soldier as the man in the tank—but the public is a long way from understanding that the same is true of the man at the throttle, in the cupola, or on the rip track. President Jeffers, in his campaign among U. P. employees to bring this great fact home to them, has initiated an educational effort which deserves to spread widely—not only in transportation but among all the people.

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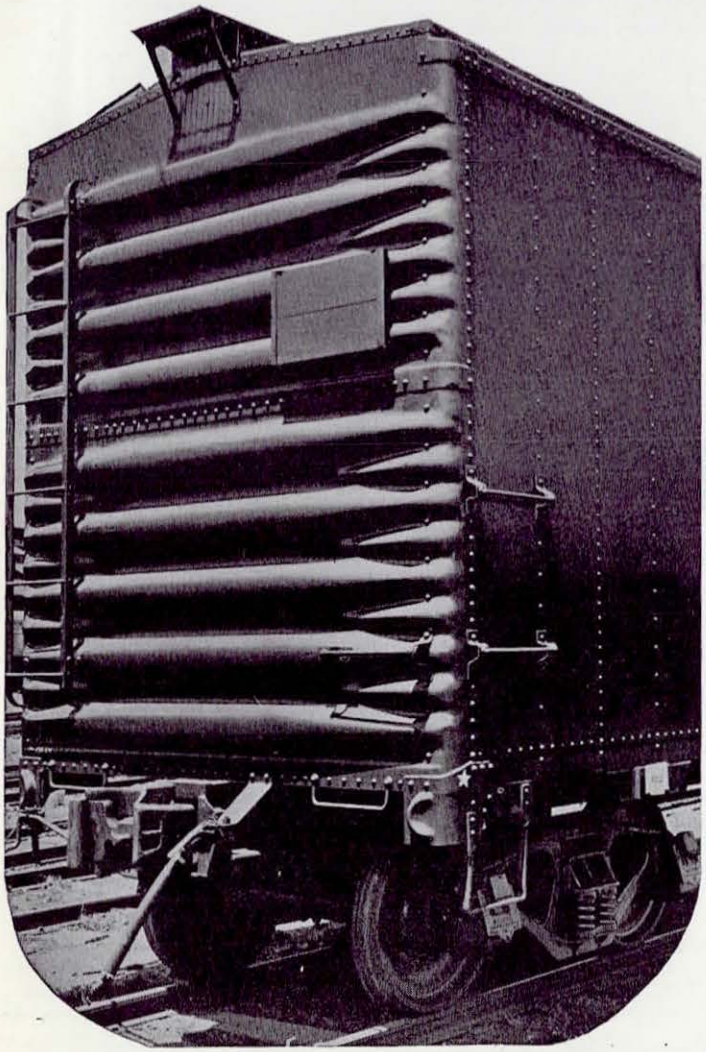
EFFICIENCY IN TRAVEL: In the news pages herein helpful suggestions from both Mr. Eastman and Mr. Budd are reported to make the country's limited travel facilities yield maximum service. Short-haul and spread-out vacations and moving travel to mid-week to avoid the week-end "hump" are among the suggested changes.

TO KEEP CARS IN SERVICE
IS IMPORTANT

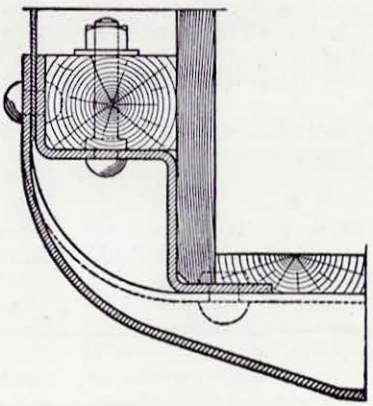
STRONG ENDS ARE ESSENTIAL

DREADNAUGHT ENDS

with W-Section Post and Round Corner.



PROVIDE UNIFORM OVERALL STRENGTH, RESILIENCY AND SERVICEABILITY



SECTION THRU CORNER OF CAR.

W-SECTION CORNER POSTS FURNISHED BY CARBUILDER.

STANDARD RAILWAY EQUIPMENT MFG. COMPANY

HAMMOND, INDIANA

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CHICAGO OFFICE – 310 S. MICHIGAN AVE.

The Commission, the O.P.A. and Freight Rates

If there is any government body which can be presumed to possess the knowledge, experience and regard for the public welfare necessary to determine questions of railroad freight rates in the public interest, it is the Interstate Commerce Commission. The Office of Price Administration, staffed by hordes of nondescripts snatched from obscurity into the insolence of office, cannot claim the ability or institutional character entitling it to a veto over the Commission. That, however, is what it has sought.

On March 2 the Commission made a decision holding that freight rates might, with certain important exceptions, be increased 6 per cent. The decision was unanimous, but several of the commissioners would have been willing to grant larger increases. A full record was before the Commission regarding current and prospective earnings of the railways and of what they need in order to cope with an unprecedentedly large and increasing traffic.

C. C.

Eleven days later the Office of Price Administration, in the person of Dexter Keezer, assistant administrator, and a coterie of ex officio "experts" appeared before a group of railway traffic officers and demanded that they rescind the rate increase on a long list of commodities. The O. P. A. also petitioned the Commission to postpone until April 15 the effective date of the increased rates upon these commodities. Keezer contended that the rate increases would "completely disrupt" the "price ceilings" the O. P. A. has established on many commodities; and also that railway earnings have been recently so large that, probably, the carriers could absorb last fall's wage advance without any increase in rates. Fortunately, the Commission has denied O. P. A.'s petition to postpone the advance in rates, but what occurred is so significant that it is well worth reviewing.

The Commission, in reaching its decision, could not have failed to note that carloadings for the first eight weeks of 1942 were 11.1 per cent above the similar 1941 period. Further information on the trend of railroad traffic, to be had on March 13 but not on March 2, was that in the ninth week of 1942 carloadings were only 3.3 per cent above last year and, in the tenth week only 3.8 per cent. Which is to say, that the evidence on traffic trends available to Mr. Keezer, but not to the Commission when it reached its decision, would have supported a larger increase than the one actually granted. The recent downward trend of traffic may be temporary, but cannot reasonably be ignored.

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What, then, about the O. P. A.'s contention that the proposed railroad rates would "completely disrupt" its "price ceilings" on some commodities? If such had been the case, it would have been possible that the O. P. A. "price ceilings" were at fault. And the railroads did not seek the rate increase, except in a formal way. It was, rather, forced upon them by government pressure—of which O. P. A. was fully aware. The railway unions demanded a wage increase, which the railroads opposed. A "fact-finding" board appointed by the President recommended that certain wage advances be granted. In making this recommendation, the board stated it acted "on the assumption that the railroads can secure needed relief from resulting inadequate net revenues by obtaining permission to increase their transportation rates. . . . The duty of answering this question . . . has been assigned by the Congress to the Interstate Commerce Commission . . . a Commission of recognized, outstanding ability. . . ."

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How many of these commodities are there, as regards which increases in prices since 1939 have not been such that the miniscule freight rate increases on them could scarcely be detected? And, while the O. P. A. has railed at these tiny freight rate increases, which could have little noticeable effect on its "price ceilings," it has refused to get at all excited about wage rate decisions handed down by government arbitrators which give high-rated industrial employees, working only 40 hours a week, double time for 8 hours because their 40 hours happen to include a Sunday. Such a decision, obviously, increases the weekly cost of these men's labor by 20 per cent—and wages are a many times more important factor in the selling prices of most commodities than the cost of railroad transportation.

The O. P. A. attack on the railroad rate advances would have been wholly unjustified even if these advances would have materially increased commodity prices—because it was the government, not the railroads, which, by increasing wages, initiated the process. But the foregoing citations disclose that there was not even this excuse for O. P. A.'s action. Instead, its onslaught was an act of plain disingenuousness calculated, not to defend the price structure, but to undermine needed railroad earning power—and, perhaps, to make the industry dependent upon government doles. The O. P. A. was not fighting Hitler and Hirohito, but American private enterprise—while the Administration of which it is a part is constantly appealing for "national unity."

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silent. We cannot forward winning of the war abroad to defend our American institutions by silently tolerating attacks upon them at home.

Director Eastman of the Office of Defense Transportation on Tuesday of this week issued a statement in which he supported some of the rate suspensions sought by the O. P. A. It is, of course, entirely proper and a function assigned to his office to secure rate adjustments in furtherance of the war effort by negotiations with the railroads. But this isn't the way the O. P. A. worked. It first called on the Commission to suspend the rates it did not like (contrary to its agreement to handle such questions by negotiation with the carriers) and then went to the railroads, not in the spirit of asking for something, but rather in "telling them." The pomposity of these novices in their treatment both of the railroads and the I. C. C. suggests that they may not have expected to succeed with their demands. If they got them, well and good. If not, they at least established "for the record" an alibi to use when their futile program of controlling prices without controlling wages meets with failure. When that happens, they now doubtless expect to put the blame falsely on freight rates.

Time to Deal Rationally with Transportation

A letter has come to your observer's attention, written by Dabney T. Waring, general manager, Middle Atlantic Motor Carriers' Conference, to the members of the conference. The letter reads in part:

"There has been severe criticism directly from one of the Interstate Commerce Commissioners of the failure of common carriers by motor vehicle to fulfill the obligation to the public under their certificate, in that they fail, for one excuse or another, to accept and transport shipments deemed to be unpracticable, especially small shipments. To what extent there are grounds for criticism I do not know, but if it is generally true that common carriers are guilty it is a severe indictment of the industry.

"Your obligation to accept and transport all freight offered within the scope of your operating rights is clear, and not only will your failure to do so injure the standing of the industry generally, but might result in the revocation of your certificates. Hundreds of thousands of dollars are being spent annually to build up respect and remove prejudices against the trucking industry and practices of the kind referred to would do much to nullify these efforts."

The Commissioner who thus criticized the common carrier truckers would have only to examine the Commission's own orders in I. C. C. Docket, Ex Parte MC20, to inform himself that the Commission itself is a party to the creation of this condition.

More specifically, the minimum rate order proposed by the motor carriers and approved by the Commission provides certain minimum rates which automatically induce shippers to give the "unpracticable" traffic to the railroads, express companies and other motor carriers who are not members of the Conference.

Congress gave the common truck carriers a further license to pick-and-choose traffic by neglecting to delegate authority to the Commission to require such operators to serve intermediate points along their routes. The result has been that any number of the more prosperous carriers have become so by selecting the places where the pickings are good—and leaving the "cats and dogs" to their competitors.

The shippers and receivers of freight in this country are either entitled to an overall transportation service (all commodities and all origins and destinations) or not—depending on public policy. If the public policy is that such complete service should be required of for-hire transportation agencies, then every agency authorized to do business should be required to shoulder a fair share of the "cats and dogs." Common sense directs that the long-haul "cats and dogs" should be the railroads' burden, and the unattractive short-hauls the portion of the trucks.

To declare that handling of unattractive traffic is a duty of public carriers, and then to assign all the dirty work to only one class of carrier is, in effect, to negative the policy itself. Because the carrier thus handicapped will necessarily be impoverished by it—to the detriment, even, of its intrinsically-remunerative service. When the carrier so disadvantaged is *the nation's principal and indispensable transportation agency,* the folly of such an unbalanced policy is inescapable.

In times of peace, a rich country such as this can, and does, put up with a great deal of inefficiency born of politics. In war against able enemies who have effectively mobilized all their resources and manpower to our destruction, such wastefulness is suicidal on our part. Our peacetime ineptitude in dealing wisely with transportation has arisen because our policy toward it has so far been controlled by uninformed politicians under the spell of cunning special pleaders. But the men in the ODT who now have the power to bring reality and efficiency into this situation (and who must so deal with it if transportation is to help and not hinder the war effort) are not politicians and are not uninformed. It is highly unlikely that they are swayed by special pleading or that they are prejudiced for or against any one of the several forms of transportation (or, at least, if they have predilections, it is not conceivable that they would allow themselves to be controlled by them).

There exists, therefore, the expectation that the transportation work of the country will now be divided among the several agencies according to their relative intrinsic fitness for each type of job. Such reasonable division would enormously aid the war effort. The superior economy of such division, once accomplished, should be so beneficial—to the customers and to the transportation agencies themselves—that no one would care to go back to the present wasteful hodge-podge when the war ends.

The most effective kind of "planning" for the post-war period will be that which arises automatically from acting sensibly, realistically, scientifically toward the problems of the war itself.

Rate Increases Become Effective

ICC denies OPA's eleventh-hour petition asking delay with respect to an important group of commodities

WASHINGTON, D. C.

TARIFFS publishing the Ex Parte 148 freight-rate increases became effective as planned on March 18 after the Interstate Commerce Commission on March 16 denied the eleventh-hour petition of the Office of Price Administration for suspension until April 15 of the increases on an important group of commodities. OPA, which at the Ex Parte 148 hearings took no position with respect to the reasonableness of the general increases sought by the carriers, filed its suspension petition on March 12; and on the following day its assistant administrator in charge of the Consumer Division—Dexter M. Keezer—was declaiming on alleged inflationary aspects of the increase at a New York hearing before the railroads' Joint Traffic Committee—Ex Parte 148.

The latter is the committee of 21 traffic executives which the railroads agreed to set up for the purpose of passing upon requests of OPA and others for readjustments of specific rates. Mr. Keezer told them that OPA was contemplating asking the I. C. C. to revoke the rate increase as a whole if earnings of the railroads for 1942's first quarter indicated that the carriers could absorb the December wage increases. In this connection, the price control agency, "if necessary," will urge an exploration of the possibilities of revenue pooling or of government subsidies to aid weak roads.

What OPA Wanted

Meanwhile, as noted above, the railroads had been confronted with the formal suspension petition filed by OPA with the I. C. C.; and they turned their attention to the preparation of an answer, which was framed over the week-end and submitted to the commission on Monday, the day on which the denial of the OPA plea was announced. OPA asked that the six per cent increases be suspended on the following commodities: Cement, copper ore and concentrates; iron and steel scrap; lead ores and concentrates; lumber and lumber products; non-ferrous scrap; petroleum and petroleum products; pig iron; rubber scrap; and crude sulphur.

The petition was filed by John H. Eisenhart, Jr., acting director of the Transportation Division and transportation counsel of OPA. It asserted that the commodities named "are vital to the national defense and petitioner has determined, after investigation, that the present price structure thereon cannot absorb the rate increases allowed, necessitating upward price revision." He went on to point out that price ceilings have been established upon most such commodities, and price stabilization action has been taken on all of them.

"An increase of six per cent in transportation costs via carriers on these commodities," OPA added, "would necessitate immediate upward revision of these ceilings. Aside from the tremendous administrative burden of such revision, it would be extremely difficult, if not impossible, to regain the ground lost, and effect a downward revision corresponding to subsequent exemption of the commodities wholly or partially from the increase permitted." The petition was said to have been filed "as promptly after the decision herein as petitioner could determine the commodities affected."

With respect to the latter, the railroad answer stated at the outset that the commission would be fully justified in dismissing the petition on the ground that it was filed too tardily to afford the time for reply which is provided by the commission's rules of practice. But aside from the question of timeliness, the answer went on, the petition "is without merit and should be denied." Arguing to the latter proposition, the railroads cited OPA's statement of its position at the 148 hearing, suggesting that the commission in reaching its conclusion presumably "complied with the request of counsel that it give such weight as it deemed proper to the problems with which he said the Office of Price Administration is concerned."

One-Fifth of Whole Increase Involved

The increases which OPA sought to suspend, the railroads estimated, would amount to $41,000,000 a year on the basis of 1941 traffic, i. e., they account for slightly more than one-fifth of the total increases authorized. OPA's contention that it would be faced with an administrative burden unless the increases were suspended was appraised in the railroad answer as an endeavor "to induce the commission to take action, at the expense of the railroads and at the risk of impairment of an adequate and efficient national railroad transportation system, for the sole purpose of relieving that office of duties imposed upon it by statute."

Previously the railroads had suggested that Congress had charged OPA with "no duty to maintain an adequate transportation system"; nor was the law creating OPA intended "to repeal the provisions of the Interstate Commerce Act, under which it remains the duty of the Interstate Commerce Commission to see to it that the railroads of the country earn sufficient revenue to provide the adequate and efficient transportation service so essential to our national welfare." And if the commodities covered in the OPA petition are "vital to the national defense," the answer replied that "the same may be said of the services the railroads are furnishing."

Thus the carriers argued that the I. C. C. "cannot lawfully abdicate" in favor of OPA or anyone else. Finally, they called attention to the fact that "the trend of traffic since the end of January has been by no means so favorable as it was during that month." In other words, the January carloadings were 11.7 per cent above 1941, whereas February's were up only 8.9 per cent; and the loadings for the first week in March were but 3.8 per cent above the comparable 1941 week.

The commission's refusal to suspend came in a brief order, stipulating that the OPA petition "be, and it is hereby denied." An accompanying notice from ICC Secretary W. P. Bartel revealed that in considering the OPA petition, the commission had also considered and denied "certain other protests and requests for suspension by various individuals and companies."

As noted above, the OPA threats that it might seek revocation of the whole increase and suggest pooling or government subsidies for the benefit of weak roads were embodied by Assistant Administrator Keezer in his lecture on inflation to the railroad traffic committee. If the revocation is asked, Mr. Keezer anticipates that "it will no doubt be argued that nothing can be done by way of general downward revision of freight rates without working dangerous financial hardship on the less favored road." But OPA does not propose to "let such arguments discourage our efforts to secure a general reduction in freight rates if the railroads as a whole have a net operating income which would make a reduction feasible."

"In this connection," Mr. Keezer went on, "we shall, if necessary, urge an exploration of the possibilities of financial pooling arrangements. . . . Also, rather than have the necessities of these less favored roads made the occasion of inflationary rate increases, we shall ask that the possibilities of having these necessities met by direct subsidies from the United States Treasury be explored along with all other devices which would avoid having these necessities translated into general rate increases."

All in all, Mr. Keezer seemed to be undertaking to put over his idea that with the approach of the effective date of the railroad tariffs, "the time has come" to stop inflation. He finally got down to cases, however, and the latter part of his statement was a petition to the railroad committee for suspension of the specific increases which the OPA petition had already asked the ICC to suspend. A more detailed presentation in the latter connection was made by Mr. Eisenhart, who had with him an OPA delegation comprised of price "experts" for each of the commodities involved.

ODT Also Wants Adjustments

The railroad committee also heard a presentation on behalf of the Office of Defense Transportation, made by G. Lloyd Wilson, director of ODT's Division of Rates. Mr. Wilson was formerly director also of OPA's Transportation Division; but his statement revealed that on the previous day, March 12, he had been succeeded in that position by Mr. Eisenhart who then became acting director as well as transportation counsel. It was explained that OPA's transportation set-up was thus reorganized in order to permit Mr. Wilson to devote more time to his ODT duties; although he will continue to serve as OPA's chief transportation consultant.

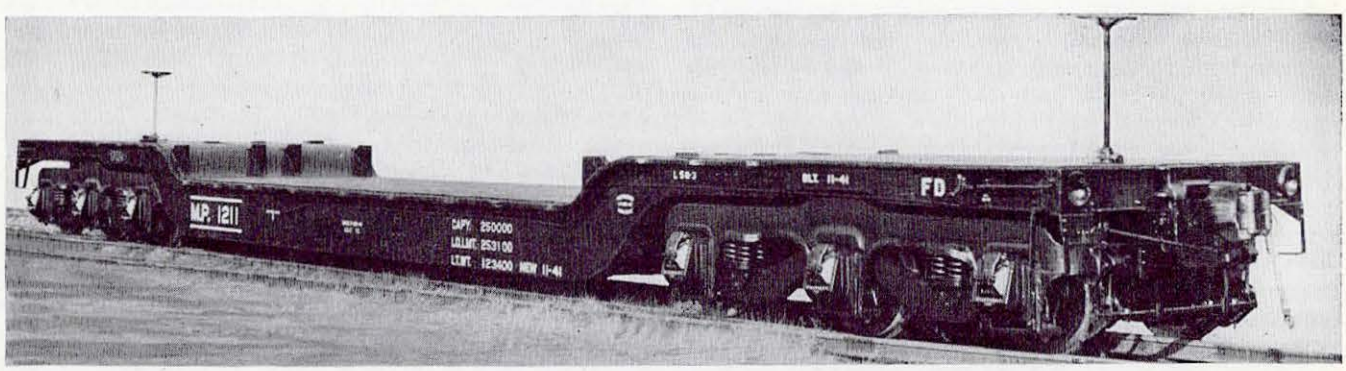
In any event, Mr. Wilson's appearance before the railroad committee was on behalf of ODT only. Generally he asserted ODT's concern about the effects of the increases upon certain movements of traffic upon which proposals for the adjustment of rates had already been made or were about to be made by ODT. The movements involved are those wherein ODT thinks adjustments have become "imperative because of the diversion of traffic which formerly moved via water carriers to rail, or by radical changes in the nature, volume, and direction of the traffic." Specifically, Mr. Wilson mentioned crude sulphur from Texas and Louisiana origins to North Atlantic and New England destinations; cement moving to South Atlantic and Gulf ports; lumber and forest products from the Pacific Coast to Eastern ports; and iron and steel scrap. In addition, ODT requested that rates on iron and steel articles from various points of origin in Eastern transcontinental groups to destinations in transcontinental territory not be increased until the pending proposals for the readjustment of rates on iron and steel articles to Pacific Coast destination before the Transcontinental Freight Bureau are concluded.

ODT Has Confidence in Rail Committee

ODT's position was restated by Director Joseph B. Eastman in a March 17 statement, issued "to prevent misunderstanding." "The function of the Division of Rates of the Office of Defense Transportation," Mr. Eastman said, "is to see that rates are established via the various carriers which will expedite the free flow of commodities necessary to the war effort. Because war conditions have caused dislocations in normal traffic movements, it is and will continue to be necessary to negotiate certain rates for particular movements. In such instances it may at times be necessary to request reductions in existing rates."

Then Mr. Eastman went on to list the aforementioned rates and movements in which Mr. Wilson is now interested. He concluded with an expression of hope that those adjustments, and others which may be sought, can be brought about through negotiations with the Ex Parte 148 committee or other carrier committees. With respect to the 148 committee, Mr. Wilson had said at New York that ODT does not "share the skepticism of those who have expressed doubt as to the efficacy of this committee plan of negotiating rate adjustments upon a fair and constructive basis to care for emergency conditions made necessary by the war." The carrier committee has docketed the OPA and ODT requests for consideration at its forthcoming meetings, the date for the next of which has not yet been set.

* * * *



Missouri Pacific Depressed-Center Flat Car by the American Car & Foundry Co.

This car, built in 1941, has a one-piece cast-steel underframe and six-wheel equalized trucks with 6½-in. by 12-in. journals and 30-in. rolled-steel multiple-wear wheels. Truck centers are at 44 ft. and the length over the coupler pulling faces is 61 ft. 4 in. Width: Maximum, 8 ft. 10¾ in.; at well, 7 ft. 8 in.

The Car Man's Part in Winning the War*

Points at which tightening up in conditioning freight cars are needed—Importance of adequate inspection and repairs before loading

By R. K. Betts

Foreman Car Repairs, Pennsylvania, Rose Lake, Ill.

AMERICA faces the most stupendous task she has ever encountered, a task which will require every resource at our command in men, money and materials. Without question, the greater part of the burden of transporting the vast amounts of material and men which will be employed in waging this war will fall on the railroads. Already, during the past 12 months, approximately three million troops have been moved with equipment and supplies incident thereto, and we have only begun. Tomorrow will bring increased movements and no one knows the full extent of their magnitude. This much we can say; the railroads have pledged themselves to meet all transportation needs and nothing will be spared to keep that pledge. It must be kept at all costs.

Just where does the car man fit into this picture? When I speak of the car man I refer to every railroad employee involved in the maintenance and inspection of freight- and passenger-car equipment which is, and will be, employed in this great transportation epoch. What is our part in winning the war? To put it simply, I repeat the well-known slogan, "Keep Them Rolling." Easy to say but no small task to accomplish! Ask yourself the question "What is my responsibility in this vast program?" I hear some one say, "I have been a foreman or a car man or a car inspector for 20 years or more and I think I know my job as well as the next one. I am doing my best." But are you? As one of our well-known modern statesmen would say, "Let's examine the record."

Trained Car Forces are Essential

For the past years of depression the maintenance of cars has been restricted to absolute necessities, and car owners, both railroad and private car companies, have made every effort to keep their upkeep costs to the minimum. Only a limited number of new cars were built in this period and storage tracks and sidings along the right-of-way were filled to capacity with bad-order cars, many of which required extensive repairs. As a result of these conditions, repair and inspection forces were kept to the minimum. Until recent months, few new men were added to the car-department forces and practically none were in training for the important positions of carmen, inspectors and supervision. What has that to do with you? We are confronted with the task of educating and training these new employees in the technique of inspection and car-repair work and that is not a simple task, particularly when time is so limited.

Mr. car man, Mr. inspector, this is one job you can help to do. Here is a grand opportunity for you to put your talents to work and show your real worth. We have heard too many say, "Let him get his information the same way I got mine. I am getting by, why should I worry about any one else?" Every supervisor is now needed full time to best handle his assignment and you can help immeasurably if you will lend a helping hand in teaching the new recruits who have been and will continue to be pressed into service. Answer their questions; call attention to errors which you are bound to observe; point out the rules and regulations which apply to their various tasks and I guarantee it will not be long until valuable men will be developed. It is your patriotic duty to do this. We have no place on the railroads today for the man who intends just to "get by." No man has the right to assume such an indifferent attitude. Your best effort is all that will suffice.

During the past six months, an intensive effort has been sponsored jointly by the A. A. R. and individual car owners, to improve the maintenance of car equipment and thus increase the availability of cars and avoid unnecessary delays to important shipments. Circular letters have been put out specifying the most important details of repairs which should receive preferred attention. Special field committees have been appointed in every large terminal in the country to make frequent checks of repair tracks, loading points, etc. Their purpose is to determine whether proper and complete repairs are being made and whether cars are being selected for the highest commodity classification their condition will warrant, as well as to determine whether cars, particularly open-tops, are being properly loaded and secured. As a member of the local committee, it has been my privilege to make numerous observations and I would like to point out some of the outstanding factors which seriously affect the expeditious movement of loaded cars and availability of the empties.

Trucks, Brakes and Draft Attachments

The first, and one of the most important factors, is the failure properly to maintain the trucks, foundation brake rigging and draft attachments of freight cars. Numerous cars on the shop tracks have been returned to service without correcting such defects as journal boxes over date for repacking, worn-out brake hangers and pins, defective wheels, worn brake heads and loose brake-

* Abstract of a paper presented before the Car Department Association of St. Louis, at a meeting held at St. Louis, Mo., on February 17, 1942.

beam truss rods, defective or missing brake-beam and bottom-rod supports, excessive slack in draft gears, low couplers, defective and worn coupler parts, broken, missing and improperly applied cotter and split keys, etc.

It is not uncommon to find cars with the air brakes and journal boxes stenciled for recent attention and many of the important items I have just mentioned not given any attention whatever. In some cases the work performed was not up to standard. Some of our shops are not equipped with proper gages and others that have them are not using them according to instructions. Number 2 D-type lock lifts are not always checked for defective anti-creep feature and only a portion of the car shops are changing them out to the No. 3 lock lifts in accordance with A. A. R. recommended practice.

It was developed at some points that shop cars were not being given the single-car air test, coupler heights were not gaged, side-bearing clearance not checked, and in one case owner's equipment was not being given journal-box attention, even if found overdate. These conditions have been found on both loaded and empty cars. In other words, every car that was permitted to leave the repair track without being given complete and proper attention, was a potential road failure. True, there has been a marked improvement since this campaign was inaugurated but there are still all too many delays to loaded cars enroute which could have been avoided. It is our duty to correct these conditions without further delay. It is high time we took inventory of our shop practices and eliminated these mal-functions.

Adequate Car Maintenance Not a One-Man Job

To accomplish proper maintenance of our car equipment is not a one-man job. The car man will perform only the work he is authorized to do. The car foreman looks to his superiors for instructions, materials and facilities. It is a job for all of us, from the head of the car department on down. However, the car man can, and should in all events, make proper repairs when authorized and call attention to any condition or defect not included on the write-up card. It is imperative that car maintenance be stepped up to the maximum and it remains for us to take the "if's" out of the program.

A car inspector should be familiar with the particular requirements of each shipper for whom cars are to be selected. If he is not, he should investigate the matter with the shipper if possible, or refer it to his superiors. The car should meet the requirements, but not in any case should it exceed them. Class A cars are in greatest demand and must be conserved to meet this demand. Observation confirms the fact that scores of Class A cars are being made unfit for high-class commodities by loading them with hides, oily materials, etc., when a lower-class car would be entirely suitable. Flagrant violations of this nature are occurring frequently right here in our terminal and there is no excuse for it. Full compliance with instructions by all concerned and constant vigilance on the part of supervision will go a long way toward correcting this condition.

Too Many Defective Cars Being Loaded

It is also true that cars with dangerous defects are being loaded in our territory daily as a result of inferior or no inspection when the car is empty. An excellent illustration was observed recently where a tank car with broken anchorage and center sills was moving into a plant for loading, and undoubtedly it would have been loaded had these defects not been discovered. No wonder so many cars are transferred in this terminal. We load them in bad order. Numerous other cases have been observed where cars were classified for loading and the journal boxes were over-date for repacking, some had defective wheels, low couplers, slack draft gears, etc., each a potential cause for failure. There is but one way we can correct such conditions; namely by making a thorough inspection of the equipment when empty, getting the bad-order cars into the shop and then making all necessary repairs unless circumstances demand other action be taken. Men of the car department, that is our responsibility.

The question of proper loading and securements on open-top cars cannot be emphasized too much. To those of us who have had opportunity to review the statistics covering adjustments and transfers of open-top lading in this terminal, and to make frequent observations of these conditions, it is apparent that we have a long way to go before anything nearing satisfactory results is accomplished.

While we cannot directly control this phase of our work as a whole, open-top cars loaded in this area can be, and must be, supervised to a far greater extent than is now being done. Every car inspector who has anything to do with inspecting and approving open-top shipments, should by all means be thoroughly familiar with the A. A. R. loading rules and he should make it his business to see that these rules are complied with. As a general rule shippers are willing to co-operate in this respect and it is our responsibility to see that they are familiarized with proper methods of loading and securements. A well informed, diplomatic car inspector is invaluable in this field of work.

How the Car Man Can Conserve Material

Much could be said in regard to the lack of uniformity of inspection and repair practices in effect on the various railroads. The A. A. R. rules and recommended practices fully cover what should be done in that respect.

I cannot refrain from mentioning the urgent necessity for conserving all types of material used by the railroads in connection with maintenance of car equipment.

I have heard it said that there was enough wasted by the railroads to maintain a good Class I railroad. Whether that statement could be substantiated I cannot say, but the fact remains that we are too wasteful and are not reclaiming many items of metals that are subject to welding, straightening and other methods of reclamation. Bolts, nails, odd pieces of lumber, journal-box sponging, small castings, etc., are often left exposed to the weather or scattered about the premises and trampled into the ground. Every car-department employee should immediately appoint himself a committee of one to see that no usable material is wasted.

Safe Practices Contribute to Production

No discussion of this character would be complete unless we consider the factor of "safety first." Personal injuries cost the railroads millions of dollars annually and that money is needed to pay for maintenance of essential equipment. Incapacitated employees cannot inspect and repair cars and their experience cannot be readily replaced. You not only owe it to yourself and family to maintain your health and physical well-being, but you owe it to your employer and country. Every

able-bodied man is needed to win this war and you are needed to "Keep Them Rolling."

We are at war and I know from daily observations that we can and must do a better job to accomplish our task completely. Let us resolve here and now that we will weed out the inconsistencies, comply with our rules and instructions, and, to the best of our ability, play the full part of a good soldier in our various capacities. Your uniforms are of blue denim, your implements of warfare are the hammer, the tongs, the riveter, the drill, and your assignment is no less important than that of a combat soldier.

President Orders T. P. & W. Arbitration

ON March 16, President Roosevelt addressed a direct demand to George P. McNear, president of the Toledo, Peoria & Western, that he submit the existing controversy between striking employees and the management to arbitration. As we go to press, Mr. McNear has made no reply. The present status of the controversy is that the T. P. & W. is now operating a limited freight service and has appealed to Governor Green of Illinois, requesting that state militia be employed in enforcing the injunction against violence. An executive order directing the Office of Defense Transportation to take over the T. P. & W. on behalf of the government has been predicted in dispatches from Washington.

After a tenacious fight for 80 days, attempted murder, arson and other violence finally caused Mr. McNear to curtail operations of the railway on March 14. Amid a welter of violence, injunctions, suits for criminal action and demands for settlement emanating from half a dozen government agencies, President McNear still continued to operate his railroad and still maintained his right to reject the "featherbed" rules which the brotherhoods are attempting to force upon him. In replying to all of these requests and warnings, McNear has maintained a consistent attitude. He "respectfully questions" the right of the government to order arbitration, on the contention that the Railway Labor Act makes arbitration noncompulsory and the order setting up the War Labor Board does not supersede the provisions of the Railway Labor Act.

The message from President Roosevelt followed closely after an order which emanated from the National War Labor Board on March 12, wherein "the defiance of the government of the United States" was unanimously condemned and the railroad management was called on "for the last time" to accept arbitration of the wage and rules dispute with the operating brotherhoods. This is by no means the first time in this difficulty that Mr. McNear has been told "to arbitrate or else—"

The "last warning" of the W. L. B. was released to the press on March 12, but President McNear claims that the telegram to the railway was not received until after 7 p. m. on March 13. He replied on March 14, restating his position forcefully. In concluding, he stated that as the result of violence, despite the injunction, the railway has been obliged to curtail its operations. He closed with this statement:

"We have taken every possible step to operate our railroad safely and promptly and in accordance with the laws of our country, but we cannot operate amid all this lawlessness and we cannot assume the responsibility of sending our employees out to their deaths in the performance of their duties. Therefore, we hereby ask your board, which is largely responsible for this situation, that you either immediately arrange for the enforcement of law and order so that this railroad can be operated with reasonable safety for its employees or else arrange for the United States government to take over this railroad for the balance of the war. If you decide to take over this railroad, our representatives will confer with the designated representatives of the government to work out the details."

Following receipt of this message, the War Labor Board sent the case to President Roosevelt. Meanwhile, the federal mediator has left Peoria.

The Toledo, Peoria & Western is a 239-mile line, owning 18 locomotives, 116 freight cars and 58 miscellaneous cars. It extends from Effner, Ind., to Lomax, Ill., and Keokuk, Iowa, and crosses 15 important eastern and western lines en route. Since President McNear acquired the then almost defunct line in 1928, its traffic has been built up largely through alert traffic methods until it has become an important interchange route between eastern and western lines and its track and rolling stock have been built up to a point adequate to handle its normal business. In 1941, its total operating revenues were $2,775,366, and its net railway operating income was $418,381, with an operating ratio of 60.3 per cent. In January, 1941, despite the strike, its operating revenues were $94,610, although, because of disturbed conditions, its operating ratio climbed to 166.2 per cent.

Strike Chronology

Immediately before the disturbed labor relations resulted in a strike on December 28, the railway made offers of wage advances which, it was stated, would pay the men actually working on a somewhat higher scale than on other railways. However, then as now, McNear was adamant in barring "featherbed" rules from the T. P. & W. And it was on that question that negotiations were broken off, and a strike resulted.

From the beginning, it was apparent that both sides weren't fooling. Acrimonious legal sniping began at once. On the day the strike was made effective, the railway wired the Mediation Board, reiterating several previous requests for the appointment of the emergency board and the Mediation Board, in reply, insisted that the railway management agree to arbitrate; on the board's—not the management's—terms. Almost at once, the railway began operating trains, after serving notice that employees not returning to work the following day would be considered as having severed all connections with the railway payroll. After several days of severe violence, the railroad secured a temporary restraining order against violence from the U. S. District court at Peoria. In retaliation, the unions preferred criminal charges against President McNear; H. A. Best, superintendent, and Bruce Gifford, trainmaster. These officers were apprehended and released under $2,500 bond each.

On January 6, J. B. Eastman, director, Office of Defense Transportation, wired McNear asking for arbitration and that the strikers be put back to work without prejudice, so as not to interfere with transportation. Further telegrams couched in similar terms were received from D. J. Lewis, chairman, and R. F. Cole, secretary of the Mediation Board, from Commissioner J. M. Johnson of the Interstate Commerce Commission, and from Lieutenant General William S. Knudsen, but despite this barrage, Mr. McNear stood fast, insisting

(*Continued on page 583*)

1941's Net Income Was $501,650,867

WASHINGTON, D. C.

THE Interstate Commerce Commission on March 16 made public its compilation of selected income and balance sheet items for December and the 12 months of 1941, showing last year's net income of the Class I roads to have been $501,650,867. Previously the Association of American Railroads had announced the estimated net income for 1941 as $500,545,671, as noted in the *Railway Age* of February 7, page 347. The commission's final figure for the year compares with $185,064,902 for 1940.

One hundred Class I roads reported net incomes for 1941, while 27 reported net deficits, as compared respectively with 80 net incomes and 47 net deficits in 1940. Last year's net railway operating income was $998,278,506, as compared with 1940's $682,543,213; fixed charges rose from $618,672,941 to $620,641,459.

The commission's statement shows that the roads not in receivership or trusteeship had a December net income of $50,241,738 as compared with $48,268,712 in the same month in 1940; while their net income for last year was $477,596,206 as compared with $254,493,595 in 1940.

The commission's summary and the principal items for the individual roads are given in accompanying tables.

Selected Income Items By Regions and Districts, Class I Steam Railways, Calendar Years 1941 and 1940

Region and railway	Net Railway Operating Income		Total Income		Total Deductions		Net Income	
	1941	1940	1941	1940	1941	1940	1941	1940
United States—Total	$998,278,506	$682,543,213	$1,175,229,420	$851,609,655	$673,578,553	$666,544,753	$501,650,867	$185,064,902
Eastern District—Total	396,663,827	291,200,514	487,379,347	380,088,024	290,856,453	295,538,340	196,522,894	84,549,684
New England Region	35,660,862	20,554,221	42,575,096	27,069,463	27,919,146	28,046,510	14,655,950	*977,047
Great Lakes Region	163,235,550	110,930,080	191,546,826	138,023,391	112,877,613	115,427,465	78,669,213	22,595,926
Central Eastern Region	197,767,415	159,716,213	253,257,425	214,995,170	150,059,694	152,064,365	103,197,731	62,930,805
Southern District—Total	230,715,777	166,763,068	258,236,873	187,314,377	100,784,570	97,805,815	157,452,303	89,508,562
Pocahontas Region	92,042,384	84,823,163	96,861,954	89,084,828	15,064,075	15,302,648	81,797,879	73,782,180
Southern Region	138,673,393	81,939,905	161,374,919	98,229,549	85,720,495	82,503,167	75,654,424	15,726,382
Western District—Total	370,898,902	224,579,631	429,613,200	284,207,254	281,937,530	273,200,598	147,675,670	11,006,656
Northwestern Region	123,783,409	82,172,908	134,361,419	93,219,153	93,436,479	93,568,605	40,924,940	*349,452
Central Western Region	167,114,841	103,457,687	210,088,079	146,279,304	124,147,137	116,429,552	85,940,942	29,849,752
Southwestern Region	80,000,652	38,949,036	85,163,702	44,708,797	64,353,914	63,202,441	20,809,788	*18,493,644
Akron, Canton & Youngstown[1]	657,168	413,297	783,581	515,766	639,873	455,580	143,708	60,186
Atchison, Topeka & Santa Fe[2]	40,546,790	24,017,625	43,738,906	26,391,160	13,502,325	13,645,789	30,236,581	12,745,371
Atlantic Coast Line System:								
Atlanta & West Point	202,137	11,114	226,451	34,676	6,284	5,886	220,167	28,790
Atlanta, Birmingham & Coast	213,791	*225,959	249,332	*190,493	28,180	24,784	221,152	*215,277
Atlantic Coast Line	11,080,953	3,757,234	18,461,341	8,972,275	7,328,869	7,148,738	11,132,472	1,823,537
Charleston & Western Carolina	814,606	428,680	835,742	446,297	304,797	303,165	530,945	143,132
Clinchfield	5,390,038	3,672,086	5,403,182	3,684,074	5,403,182	3,684,074	.....	.....
Georgia R. R.—Lessee Organization	1,437,454	744,356	1,475,625	785,945	667,000	667,511	808,625	118,434
Louisville & Nashville	25,548,223	17,187,993	28,639,859	18,849,448	9,164,609	9,312,302	19,475,250	9,537,146
Nashville, Chattanooga & St. Louis	3,309,419	2,069,426	3,498,769	2,251,807	1,610,252	1,548,363	1,888,517	703,444
Western Ry. of Alabama	299,760	178,842	334,408	213,466	75,170	74,617	259,238	138,849
Baltimore & Ohio System:								
Alton	1,992,757	15,977	2,097,043	101,223	1,905,005	1,825,939	192,038	*1,724,716
Baltimore & Ohio	46,297,125	30,618,531	54,603,873	38,863,245	33,511,990	33,313,748	21,091,883	5,549,497
Staten Island Rapid Transit	*190,269	*288,982	571,452	577,128	571,452	577,128	.....	.....
Bangor & Aroostook	1,357,316	843,435	1,408,257	888,765	754,532	763,232	653,725	125,533
Bessemer & Lake Erie	7,137,888	7,330,249	7,381,869	7,606,011	1,682,869	1,545,665	5,699,000	6,060,346
Boston & Maine	10,492,596	6,935,241	11,814,601	8,095,462	6,762,408	6,943,265	5,052,193	1,152,197
Burlington-Rock Island	*61,536	*164,585	*54,870	*162,908	785,189	786,423	*840,059	*949,331
Burlington Route:								
Chicago, Burlington & Quincy	19,135,005	13,082,778	20,358,127	14,153,310	9,938,985	9,760,446	10,419,142	4,392,864
Colorado & Southern	1,043,185	68,062	2,048,031	943,974	2,102,248	2,061,800	*54,217	*1,117,826
Fort Worth & Denver City	1,228,082	844,699	1,248,190	864,067	1,088,272	1,118,816	159,918	*254,749
Cambria & Indiana	857,299	954,447	871,905	968,686	69,541	78,641	802,364	890,045
Canadian National System:								
Canadian National Lines in New England	*502,876	*633,533	594,158	583,178	573,613	572,402	20,545	10,776
Central Vermont	1,408,388	730,142	1,465,885	775,378	1,605,944	1,240,916	*140,059	*465,538
Duluth, Winnipeg & Pacific	32,423	34,584	519,321	470,139	449,706	470,137	69,615	2
Grand Trunk Western	6,154,930	3,934,745	7,023,977	4,829,325	5,104,188	4,622,691	1,919,789	206,634
Canadian Pacific System:								
Canadian Pacific Lines in Vermont	*488,916	*482,468	264,000	264,000	264,000	264,000	.....	.....
Duluth, South Shore & Atlantic[1]	627,466	279,722	638,494	295,439	922,204	932,924	*283,710	*637,485
International Ry. Co. of Maine	693,516	561,497	703,312	570,908	703,312	570,908	.....	.....
Minneapolis, St. Paul & Sault Ste. Marie[1]	5,287,094	4,352,235	5,434,459	4,495,515	9,597,095	8,924,314	*4,162,636	*4,428,799
Spokane International	197,702	150,095	210,253	165,639	289,413	300,126	*79,160	*134,487
Chesapeake & Ohio System:								
Chesapeake & Ohio	51,559,186	40,817,746	53,024,217	42,063,200	8,084,473	8,472,034	44,939,744	33,591,166
Erie[3]	20,931,583	13,853,996	22,086,965	14,925,217	14,156,437	14,910,954	7,930,528	14,263
New York, Susquehanna & Western[1]	657,852	439,084	740,040	509,945	655,824	656,865	84,216	*146,920
New York, Chicago & St. Louis	17,568,115	8,492,405	19,752,768	10,831,084	7,066,077	7,220,255	12,686,691	3,610,829
Chicago & Eastern Illinois	1,971,542	989,708	2,251,844	1,304,886	1,463,272	2,345,907	788,572	*1,041,021
Chicago & Illinois Midland	1,080,904	1,269,177	1,089,776	1,279,057	350,056	402,867	739,720	876,190
Chicago & North Western System:								
Chicago & North Western[1]	16,793,076	10,094,500	18,352,604	11,535,814	16,892,487	16,758,183	1,460,117	*5,222,369
Chicago, St. Paul, Minneapolis & Omaha	1,703,732	406,869	1,782,860	474,004	2,488,539	2,520,881	*705,679	*2,046,877
Chicago Great Western	2,918,678	1,784,230	3,030,313	1,906,390	1,290,732	1,866,446	1,739,581	39,944
Chicago, Indianapolis & Louisville[1]	2,224,062	1,329,102	2,343,316	1,425,166	1,530,184	1,538,866	813,132	*113,700
Chicago, Milwaukee, St. Paul & Pacific[1]	28,181,975	13,845,644	29,341,397	14,987,869	23,810,063	23,814,391	5,531,334	*8,826,522
Chicago, Rock Island & Pacific[1]	17,616,382	8,133,477	18,352,967	8,575,107	13,708,384	14,179,272	4,644,583	*5,604,165
Colorado & Wyoming	416,979	409,738	418,329	408,866	83,250	83,250	335,079	325,616
Columbus & Greenville	117,586	67,202	138,971	87,519	11,007	10,728	127,964	76,791
Delaware & Hudson	8,497,736	5,619,258	8,867,951	5,772,292	5,843,531	5,009,862	3,024,420	762,430
Delaware, Lackawanna & Western	10,125,797	6,736,538	11,454,530	8,122,127	7,782,832	7,916,850	3,671,698	205,277
Denver & Rio Grande Western[1]	4,517,079	2,761,157	3,902,558	3,078,461	6,204,472	6,148,947	*2,301,914	*3,070,486

* Deficit.
[1] Report of trustee or trustees.
[2] Includes Atchison, Topeka & Santa Fe, Gulf, Colorado & Santa Fe, and Panhandle & Santa Fe.
[3] Includes operations of Erie and Chicago and Erie prior to reorganization December 22, 1941.

Selected Income Items By Regions and Districts, Class I Steam Railways, 1941 and 1940—Continued

Region and railway	Net Railway Operating Income		Total Income		Total Deductions		Net Income	
	1941	1940	1941	1940	1941	1940	1941	1940
Denver & Salt Lake	$915,335	$911,293	$932,387	$919,368	$917,955	$910,064	$14,432	$9,304
Detroit & Mackinac	105,935	130,639	111,020	135,897	114,894	116,271	*3,874	19,626
Detroit & Toledo Shore Line	842,353	842,634	905,633	908,145	177,159	193,708	728,474	714,437
Detroit, Toledo & Ironton	3,019,404	2,293,963	3,091,460	2,346,038	806,700	807,830	2,284,760	1,538,208
Duluth, Missabe & Iron Range	14,311,352	11,715,929	14,639,109	12,084,122	1,077,457	1,109,197	13,561,652	10,974,925
Elgin, Joliet & Eastern	5,541,975	4,884,588	5,700,316	5,086,571	822,969	1,496,335	4,877,347	3,590,236
Florida East Coast[1]	1,580,527	985,219	1,652,098	1,065,787	2,942,712	2,979,717	*1,290,614	*1,913,930
Frisco Lines:								
St. Louis-San Francisco[1]	11,997,351	5,395,121	12,240,122	5,559,002	12,763,352	12,705,605	*523,230	*7,146,603
St. Louis, San Francisco & Texas	128,046	*211,197	144,420	*195,799	1,273,214	58,455	*1,128,794	*254,254
Georgia & Florida[2]	190,836	*68,789	205,058	*56,340	726,177	704,556	*521,119	*760,896
Great Northern	28,001,535	21,807,064	31,627,785	25,025,203	14,842,626	14,817,009	16,785,159	10,208,194
Green Bay & Western	261,227	247,012	301,168	253,499	74,409	69,178	226,759	184,321
Gulf, Mobile & Ohio[5]	3,661,460	1,505,525	3,965,869	1,726,319	1,951,961	2,330,664	2,013,908	*604,345
Illinois Central System:								
Central of Georgia[1]	4,385,060	771,133	5,028,662	1,669,253	3,634,675	3,564,927	1,393,987	*1,895,674
Gulf & Ship Island	*38,541	*171,921	*11,906	*139,080	53,903	60,818	*65,809	*199,898
Illinois Central	21,101,522	14,638,099	26,865,117	17,750,419	16,439,108	16,870,289	10,426,009	880,130
Yazoo & Mississippi Valley	4,801,729	2,121,051	4,903,399	2,262,649	4,903,399	2,262,649	.....	.....
Illinois Terminal	1,554,573	1,158,488	1,579,301	1,184,099	601,088	608,367	978,213	575,732
Kansas City Southern	4,083,546	3,420,042	4,769,592	4,039,181	2,923,470	2,906,868	1,846,122	1,132,313
Kansas, Oklahoma & Gulf	775,387	734,291	841,376	797,496	271,570	305,321	569,806	492,175
Lake Superior & Ishpeming	1,045,285	1,199,816	1,044,496	1,199,978	377	381	1,044,119	1,199,597
Lehigh & Hudson River	429,942	261,097	455,513	285,867	670	836	454,843	285,031
Lehigh & New England	1,388,190	1,197,280	1,414,594	1,219,674	371,491	375,631	1,043,103	844,043
Lehigh Valley	10,093,506	6,883,261	11,028,983	7,663,877	7,772,513	7,964,903	3,256,470	*301,026
Louisiana & Arkansas	2,433,816	1,731,127	2,512,710	1,773,046	1,059,609	983,250	1,453,101	789,796
Maine Central	2,702,482	1,966,206	3,154,028	2,426,738	1,904,946	1,987,571	1,249,082	439,167
Midland Valley	425,152	346,446	552,869	464,416	438,761	459,949	114,108	4,467
Minneapolis & St. Louis[2]	1,468,929	1,390,058	1,530,693	1,451,094	3,126,267	2,971,739	*1,595,574	*1,520,645
Mississippi Central	187,420	*16,642	189,984	*14,649	130,717	130,716	59,267	*145,365
Missouri & Arkansas	31,382	41,212	32,815	44,292	8,790	4,016	24,025	40,276
Missouri-Kansas-Texas[6]	3,969,685	1,937,991	4,495,961	2,295,900	5,141,486	5,137,035	*645,525	*2,841,135
Missouri Pacific System:								
Beaumont, Sour Lake & Western[1]	1,085,715	431,525	1,088,843	434,618	176,343	174,758	912,500	259,860
International-Great Northern[1]	1,334,669	*34,529	1,477,708	5,648	2,820,756	2,815,955	*1,343,048	*2,810,307
Missouri-Illinois[1]	585,212	474,791	724,961	478,410	127,516	152,085	597,445	326,325
Missouri Pacific[1]	23,033,729	10,083,018	25,167,617	11,388,411	20,942,351	20,952,868	4,225,266	*9,564,457
New Orleans, Texas & Mexico[1]	1,329,846	728,152	1,389,988	2,661,161	2,799,062	2,792,899	*1,409,074	*131,738
St. Louis, Brownsville & Mexico[1]	2,014,975	1,530,109	2,094,024	1,595,104	800,394	793,830	1,293,630	801,274
San Antonio, Uvalde & Gulf[1]	*323,250	*396,601	*313,730	*387,320	244,273	246,150	*558,033	*633,470
Texas & Pacific	6,938,074	4,875,692	7,462,274	5,494,808	3,916,773	3,931,480	3,546,001	1,563,328
Monongahela	1,989,771	1,430,896	2,011,938	1,449,175	648,924	636,645	1,363,014	812,530
Montour	826,403	875,040	830,955	879,330	48,000	53,698	782,955	825,632
Nevada Northern	191,241	239,815	198,968	247,491	710	684	198,258	246,807
New Haven System:								
New York, New Haven & Hartford[1]	16,924,935	9,274,354	19,972,590	12,010,903	13,960,212	14,014,078	6,012,378	*2,003,175
New York, Ontario & Western[1]	*216,027	*716,776	*197,757	*697,822	1,353,905	1,367,922	*1,551,662	*2,065,744
New York Central Lines:								
New York Central[3]	57,418,760	44,052,437	76,502,548	62,235,553	50,256,986	50,970,469	26,245,562	11,265,084
Pittsburgh & Lake Erie	7,491,014	5,591,525	7,962,026	5,998,876	1,814,323	921,595	6,147,703	5,077,281
New York Connecting	2,806,114	1,451,881	2,862,071	1,479,143	983,194	1,279,333	1,878,877	199,810
Norfolk & Western	29,076,278	33,254,232	32,077,993	35,941,128	4,315,929	4,007,629	27,762,064	31,933,499
Norfolk Southern[2]	849,317	247,605	1,037,496	433,496	1,249,246	899,042	*211,750	*465,546
Northern Pacific	19,922,776	13,583,074	22,669,049	17,394,523	14,912,033	15,330,430	7,757,016	2,064,093
Oklahoma City-Ada-Atoka	23,163	*17,523	25,868	*15,109	183	*7,831	25,685	*7,278
Pennsylvania System:								
Long Island	767,881	757,887	1,104,442	1,162,278	2,395,128	2,378,394	*1,290,686	*1,216,116
Pennsylvania	97,102,488	86,499,486	138,765,583	127,835,141	86,381,625	87,059,311	52,383,958	40,775,830
Pennsylvania - Reading Seashore Lines	*990,589	*2,490,814	*799,194	*2,325,594	1,088,268	1,088,497	*1,887,462	*3,414,091
Pere Marquette	6,115,395	4,063,208	6,636,486	4,602,388	3,399,579	3,349,321	3,236,907	1,253,067
Pittsburgh & Shawmut	242,650	237,390	245,213	240,500	451,911	26,148	*206,698	214,352
Pittsburgh & West Virginia	1,654,399	800,209	2,082,152	1,237,603	907,360	910,755	1,174,792	326,848
Pittsburg, Shawmut & Northern[2]	282,931	247,131	288,420	253,523	187,566	158,865	100,854	94,658
Reading System:								
Central of New Jersey[1]	5,088,050	1,364,795	5,924,181	2,226,398	5,384,875	5,350,795	539,306	*3,124,397
Reading	16,152,539	13,460,806	18,093,461	15,456,287	8,763,257	9,029,070	9,330,204	6,427,217
Richmond, Fredericksburg & Potomac	2,618,024	1,075,988	2,867,813	1,299,396	331,452	323,616	2,536,361	975,780
Rutland[2]	267,307	*92,534	336,194	*25,012	406,985	410,805	*70,791	*435,817
Seaboard Air Line[2]	10,106,964	4,404,333	10,611,359	4,721,480	9,430,289	9,694,829	1,181,070	*4,973,349
Southern System:								
Alabama Great Southern	2,331,666	1,697,157	3,512,255	2,884,209	537,130	545,681	2,975,125	2,338,528
Cincinnati, New Orleans & Texas Pacific	5,958,047	4,998,100	6,084,245	5,092,296	1,861,488	1,853,862	4,222,757	3,238,434
Georgia Southern & Florida	524,289	494,382	531,861	503,092	362,960	365,197	168,901	137,895
New Orleans & Northeastern	1,426,799	675,770	1,454,055	701,153	345,956	390,098	1,108,099	311,055
Southern	32,789,981	21,457,294	35,669,611	24,175,465	16,299,717	16,823,393	19,369,894	7,352,072
Southern Pacific System:								
Northwestern Pacific	*200,340	*361,703	*166,438	*327,213	1,406,723	1,436,125	*1,573,161	*1,763,338
St. Louis Southwestern[1 4]	7,495,070	2,795,591	7,607,904	2,874,465	3,135,856	3,123,223	4,472,048	*248,758
Southern Pacific	44,455,854	26,828,594	63,198,826	47,272,566	49,448,024	40,541,622	13,750,802	6,730,944
Texas & New Orleans	12,981,447	5,637,265	13,308,476	5,941,311	4,677,372	4,514,076	8,631,104	1,427,235
Spokane, Portland & Seattle	3,030,159	1,282,076	3,239,418	1,479,925	3,663,071	3,683,269	*423,653	*2,203,344
Tennessee Central	402,350	310,615	412,076	318,986	251,707	246,561	160,369	72,425
Texas Mexican	304,385	85,889	319,235	101,074	175,110	518,111	144,125	*417,037
Toledo, Peoria & Western	418,381	420,795	439,495	448,977	74,244	71,610	365,251	377,367
Union Pacific	30,535,373	23,358,960	48,660,016	40,180,101	19,802,596	20,734,221	28,857,420	19,445,880
Utah	78,752	80,380	81,416	81,796	79,834	57,324	1,582	24,472
Virginian	8,788,896	9,675,197	8,891,931	9,781,104	2,332,221	2,499,369	6,559,710	7,281,735
Wabash System:								
Ann Arbor[2]	662,367	450,291	682,314	463,501	437,363	440,053	244,951	23,448
Wabash[2]	9,114,649	4,553,345	9,788,652	5,188,628	4,256,539	7,524,527	5,532,113	*2,335,899
Western Maryland	5,795,020	5,306,408	5,921,552	5,459,861	3,367,198	3,359,127	2,554,354	2,100,734
Western Pacific[4]	4,223,986	2,646,040	4,579,258	2,940,050	3,884,110	3,853,643	695,148	*913,593
Wheeling & Lake Erie	3,972,442	4,344,733	4,125,651	4,514,422	571,374	554,793	3,554,277	3,959,629

* Deficit.
[1] Report of trustee or trustees.
[2] Report of receiver or receivers.
[3] Includes Boston & Albany, lessor to New York Central.
[4] Includes St. Louis Southwestern and St. Louis Southwestern of Texas.
[5] Returns for 1940 include figures of Gulf, Mobile & Northern and Mobile & Ohio from September 1, 1940.
[6] Includes Missouri-Kansas-Texas and Missouri-Kansas-Texas of Texas.

Selected Income and Balance-Sheet Items of Class I Steam Railways in the United States

Compiled from 132 Reports (Form IBS) Representing 137 Steam Railways

(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways — For the month of December 1941	For the month of December 1940	For the twelve months of 1941	For the twelve months of 1940
1. Net railway operating income	$79,324,212	$78,850,742	$998,278,506	$682,543,213
2. Other income	39,160,951	34,539,388	176,950,914	169,066,442
3. Total income	118,485,163	113,390,130	1,175,229,420	851,609,655
4. Miscellaneous deductions from income	7,103,964	5,317,489	37,637,674	33,126,124
5. Income available for fixed charges	111,381,199	108,072,641	1,137,591,746	818,483,531
6. Fixed charges:				
6-01. Rent for leased roads and equipment	11,133,041	13,236,081	152,423,197	145,056,631
6-02. Interest deductions[1]	41,663,026	40,478,161	466,768,165	472,109,468
6-03. Other deductions	142,067	129,611	1,450,097	1,506,842
6-04. Total fixed charges	52,938,134	53,843,853	620,641,459	618,672,941
7. Income after fixed charges	58,443,065	54,228,788	516,950,287	199,810,590
8. Contingent charges	2,950,824	3,576,262	15,299,420	14,745,688
9. Net income	55,492,241	50,652,526	501,650,867	185,064,902
10. Depreciation (Way and structures and Equipment)	24,807,356	17,542,945	223,219,489	205,893,174
11. Federal income taxes	4,216,280	4,210,473	170,519,992	59,775,570
12. Dividend appropriations:				
12-01. On common stock	23,414,331	38,438,604	158,400,722	136,099,682
12-02. On preferred stock	3,298,765	1,060,998	27,363,284	23,463,039
Ratio of income to fixed charges (Item 5 ÷ 6-04)	2.10	2.01	1.83	1.32

[1] Represents accruals, including the amount in default.

[2] Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.

[3] Includes obligations which mature not more than 2 years after date of issue.

Selected Asset and Liability Items	All Class I Railways — Balance at end of December 1941	Balance at end of December 1940
13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$499,216,797	$563,519,967
14. Cash	$761,944,546	$625,966,443
15. Temporary cash investments	134,585,121	56,300,662
16. Special deposits	216,472,767	127,637,940
17. Loans and bills receivable	1,198,759	1,677,594
18. Traffic and car-service balances—Dr.	32,356,930	28,189,802
19. Net balance receivable from agents and conductors	85,674,075	56,423,758
20. Miscellaneous accounts receivable	204,343,484	139,078,273
21. Materials and supplies	460,099,237	334,739,189
22. Interest and dividends receivable	16,780,448	15,572,257
23. Rents receivable	1,116,072	1,395,722
24. Other current assets	5,776,321	5,143,420
25. Total current assets (items 14 to 24)	1,920,347,760	1,392,125,060
26. Funded debt maturing within 6 months[2]	$96,574,237	$95,215,027
27. Loans and bills payable[3]	$57,293,193	$91,489,767
28. Traffic and car-service balances—Cr.	56,946,342	48,334,482
29. Audited accounts and wages payable	326,201,710	222,818,602
30. Miscellaneous accounts payable	61,040,584	57,078,647
31. Interest matured unpaid	73,283,063	65,336,142
32. Dividends matured unpaid	13,395,794	12,644,261
33. Unmatured interest accrued	67,086,635	68,163,265
34. Unmatured dividends declared	7,785,770	5,360,235
35. Unmatured rents accrued	16,597,980	16,888,251
36. Accrued tax liability	346,873,419	216,938,092
37. Other current liabilities	53,799,275	38,834,283
38. Total current liabilities (items 27 to 37)	1,080,303,765	843,886,027
39. Analysis of accrued tax liability:		
39-01. U. S. Government taxes	238,657,908	108,999,509
39-02. Other than U. S. Government taxes	108,215,511	107,938,583

President Orders T. P. & W. Arbitration

(Continued from page 580)

that the railway was not clogging war transportation. On January 20, the U. S. Conciliation Board of the Department of Labor tried to terminate the strike, hearings being held on January 23 and 24. On January 27, A. F. Whitney and D. B. Robertson, brotherhood presidents, requested President Roosevelt to take over possession and management of the railway, an action which Mr. McNear protested against violently in a telegram to J. B. Eastman on January 31. The brotherhoods' telegram to the President was referred to the Mediation Board, and eventually wound up in the hands of John R. Steelman, director of conciliation, Department of Labor. On February 2, the three railway officers named above were arraigned in the district court on charges of violating the Railway Labor Act. Still the strike continued.

On February 16, papers certifying the strike dispute were sent to the War Labor Board by the Labor Department. The WLB wired Mr. McNear on February 20, suggesting arbitration, to which he replied that the board had evidently been misled or misinformed as to the true facts. On February 27, after a brief hearing in Washington, the WLB ordered Mr. McNear to submit the controversy to arbitration on their terms, and on March 2, President McNear respectfully declined the suggestion. He went further and announced the next day that he had cancelled such embargoes as were still in effect and that the T. P. & W. was immediately inaugurating the fastest and most complete freight service of its history. Almost immediately after the order from the WLB of February 27 CIO members from other industries in Peoria appeared on the picket lines and violence flared up again.

Meanwhile, after J. B. Eastman had declined to certify the road as necessary to war effort, such certification was obtained from Lt. Col. E. C. R. Lasher, Quartermaster Department, U. S. A. and was used by the WLB in rendering its decision of February 27. President McNear promptly wired Lt. Col. Lasher calling attention to the fast and complete service then in effect on the T. P. & W. and asking that he suggest to the Department of Justice that it permit the U. S. marshal in Peoria to hire additional deputy marshals at the railway's expense to insure proper enforcement of the injunction against violence. Meanwhile, Senator James Mead of New York brought the strike to the attention of the U. S. Senate and demanded to know why McNear was permitted to thwart the government.

Strikers "Reasonable" Attitude

Almost all government bodies which have entered into the controversy have stressed the fact that the unions have been willing to "arbitrate" throughout and have intimated that the fault was entirely with the railway. Actually, McNear has never flatly declined to arbitrate and his persistent stand has been based on a disinclination to arbitrate in the manner proposed. A few weeks ago, a federal mediator arrived in Peoria and it seemed that arbitration was at last imminent. How-

ever, the place selected by the mediator for such arbitration was a room in a hotel in Peoria that had been used as a brotherhood headquarters throughout the strike. This gives basis to Mr. McNear's complaint that so far the mediators have appeared more like labor partisans than neutral referees.

Indicative of the "reasonable" attitude of the employees, a resume of the activities since the strike began is illuminating. During New Year's week, rocks were thrown at trains, switches were misplaced with the apparent intention of derailing trains, and the violence culminated in the hurling of bottles of gasoline into engine cab windows.

After obtaining the temporary restraining order against violence, the railway proceeded to seek an injunction, and after a hearing that was characterized by denials on the part of the brotherhood representatives that they had anything to do with the violence, Judge J. L. Adair of the federal court at Peoria, granted a temporary injunction on January 19. On January 23 and 24, there was a joint meeting of the United States conciliation service of the Department of Labor and the brotherhood and company representatives, but when this effort failed to result in a settlement, violence flared anew.

Dynamite as a "Persuader"

On February 3, Judge Adair summoned three men on charges of violating the injunction. The judge's order alleged that Paul Brokaw, public relations representative of the brotherhoods, had paid $1,270 to William Weaver to dynamite the railway's bridge near Eureka, Ill., and that Weaver was stopped by a county deputy sheriff as General Chairman Newdigate of the Brotherhood of Railroad Trainmen drove up with a load of dynamite in his automobile. The trial of these men was set for March 9. Early in March, the brotherhoods sought to avoid the trial by an action in the Circuit Court of Appeals, claiming that an appeal against the injunction was pending and that the trial should not take place until the appeal was heard. Judge Sparks denied the application. When the trial actually started on March 9, the attorneys for the brotherhoods advanced the theory that it should not proceed because the T. P. & W. had not obeyed the WLB order of February 27. After Judge Adair of the federal court failed to see the logic of this and ordered the trial to proceed, one of the brotherhood attorneys claimed illness and the trial was postponed to March 23.

On February 12, shots were fired at a train, slightly injuring a fireman. Since then, picketing has been intensified, and various flare-ups occurred in connection with attempts to move trains into yards where representatives of the strikers, assisted by AFL and CIO sympathizers, were picketing.

On March 10, a fireman was set upon as he attempted to drive through the picket lines on his way home from the enginehouse, and suffered several broken ribs, cuts and contusions. Rocks were also hurled through windows in the homes of employees who remained on duty.

On March 14, shots were fired into an engine cab, resulting in severe injuries to the engineman who was shot in the face and in minor wounds to Harold E. Kipling, chief special agent of the T. P. & W. On March 15, shotgun blasts shattered the bedroom and dining room windows in Kipling's home. United States Marshal Robert Grant meanwhile insisted that he was fulfilling his duties to the best of his ability. He stated that he invariably read copies of the injunction to numerous persons gathered on the picket lines.

Perfect Shipping Month

BECAUSE lost or damaged shipments may cause delay to our war efforts, the Perfect Shipping Month drive, to be conducted throughout the nation in April, under the sponsorship of the National Association of Shippers Advisory Boards, will have a far-reaching significance this year. "The shippers and carriers of this country," according to W. J. Williamson, general chairman of the national management committee directing the campaign, "have resolved to hold loss and damage to freight and express in transit down to the very minimum. They are not thinking merely in terms of economic waste, although last year transportation losses exceeded twenty-three million dollars. Our principal objective is to avoid loss of time, which can be a critical matter right now. Damage to essential equipment or machinery while enroute may require replacement and that may mean serious delay. In individual cases, this lost motion can cripple an important war effort. Perfect Shipping Month symbolizes the determination of all of us to keep the transportation channels of the country free of shipping failures due to inadequate packing of goods or careless handling."

While more than twenty-five thousand shippers throughout the United States will participate actively in the campaign, special efforts will be directed toward the thousands of railway officers and employees who have it within their power to make this year's effort an outstanding success through team work in the transportation of the Nation's freight.

The loss and damage bill for 1941 approximated twenty-three million dollars—an increase of approximately 10 per cent over 1940. However, on the basis of increases ranging from 30 to 40 per cent recorded during the last three months of 1941, it is obvious that unless prompt steps are taken to turn this upward trend, the 1942 account will be exceptionally large.

Although the war situation will probably curtail the number of meetings or otherwise change methods of promoting the campaign this year, the program arranged provides for a series of shipper meetings in many of the large cities late in March and throughout April under the direction or inspiration of the thirteen regional advisory boards. Local traffic, transportation and civic clubs will provide the background in many instances. During the 1941 month, more than 700 "perfect shipping" rallies took place in 500 cities, with an attendance of over 60,000 shippers, railroad and express officers and employees.

Prominent traffic executives will lead in the appeal to the shipping public, to give every attention to most advanced and scientific methods for the packing and loading of any war materials. Transportation employees will be urged to handle all such goods, whether moving as l.c.l. or carload traffic, or by express, with the greatest care and expedition possible. Many brief talks will be staged in railroad freight houses and depots with handlers and dispatchers present and in shipping departments of large industrial establishments, with clerks engaged in the packing, wrapping or crating of shipments.

Campaign Endorsed by Governmental Bodies

As in previous years, the Perfect Shipping Month campaign has been endorsed by the Department of Commerce.

Joseph B. Eastman, director of the Office of Defense Transportation, likewise endorsed the campaign. In a letter to Mr. Williamson he stated, "Needless to say I am wholeheartedly in sympathy with your Perfect Ship-

ping Campaign. There is little I can add to the splendid presentation which you have made for the 1942 circular.

"The effect of adequate protection of freight in transit is of inculculable importance to the Nation in two respects. First, to win this war we must utilize to the utmost the vast production power of the Nation. Every article which is wasted or destroyed through carelessness imposes just that much additional burden upon our producers. Secondly, and, from our standpoint, of equal importance, is the fact that our transportation facilities are going to be taxed to their utmost to move the vast production which our Nation has underway. Every article that is destroyed means that much transportation effort, that many car-days, that many pounds of our motive power, has been wasted.

"It is my sincere conviction, as well as my hope, that every one connected with transportation will realize that from now on any unnecessary loss or damage is a blow on behalf of the enemy."

The "Perfect Shipping" campaign was endorsed by Donald M. Nelson, chairman of the WPB, in a letter written March 17 to General Chairman Williamson. Mr. Nelson wrote as follows:

"I am happy to endorse the 'perfect shipping' campaign conducted by these Shippers Advisory Boards, trade groups and carriers. When war goods are damaged in transit, serious production delays can result. Such delays, of course, aid the enemy. When civilian goods are damaged, the effect is the same; time, materials, energy and money are wasted. Too often the job has to be done all over again. Your campaign to promote good packing, secure loading and careful handling of shipments is highly commendable. I believe that all manufacturers, merchants, Chambers of Commerce, trade associations, trade papers, and transportation agencies should support this effort in every way possible."

Shippers, Consignees and Railroad Employees Sign Pledge

A feature of the 1942 campaign is a poster which embraces a war pledge for railroad, shipper and consignee employees. This poster and pledge is being posted in the plants of shippers and consignees and at various points on the railroads so that it will constantly be before employees engaged in the handling of freight.

The railroad pledge reads: "Knowing that damage to war goods may seriously delay the production of guns, tanks, planes and ships; and that loss or damage of other shipments wastes precious time and money needed for the war, we, the employees here, solemnly pledge our best efforts to prevent loss and damage. We will handle and truck freight carefully, observe caution marks such as 'fragile' and 'this end up', stow freight so it will ride safely, put it in the right car, switch cars carefully, and follow all other rules for the safe transportation of freight.

"We agree to this because we want to support our men at the front who are risking their lives for our protection and the preservation of our way of life. We all stand squarely behind these things to help win the war."

(*Continued on page 618*)

Railroad Employees Take Pledge to Insure Safe Transportation

Authorizes 10 Per Cent Pullman Rate Increase

WASHINGTON, D. C.

ASSERTING that some increase in the company's revenue is "plainly" necessary, and that the rate adjustment sought "appears to us to be no greater than is required," the Interstate Commerce Commission has granted in full the application of the Pullman Company for authority to make a 10 per cent increase in sleeping and parlor car fares and charges. The report, made public on March 13, is in Ex Parte No. 150, hearings in which were reported in the *Railway Age* of February 21, page 418.

The decision authorizes publication of the increased rates on 10 days notice, and embodies a rule for the disposition of fractions which will permit the adding of amounts necessary to make all fares end in multiples of five cents. Also, the adjustment authorized is "without prejudice to an increase in the so-called sub-normal rates, where practicable, to the normal level, subject to protest and suspension." Most of these sub-normal rates are in the East, the most important being the rates between New York and Chicago. Recalling in this connection, Passenger Traffic Manager E. P. Burke's responses to questions asked from the bench, the commission said that "at the hearing no reason occurred to petitioner why such rates should not be increased within about a year."

Mahaffie Again Hits Deadheads

Commissioner Mahaffie, concurring in part, complained about free accommodations furnished by Pullman—just as his separate expression in the Ex Parte 148 rail-rate case had complained about the free-transportation policies of the railroads. But here again, the deadheads had a champion in Commissioner Patterson who asserted, as he did in Ex Parte 148, that free passes and reduced rates "have always been regarded as part of the compensation" of railway officers and employees, "and are not adverse to the public interest." Commissioner Johnson joined in Commissioner Mahaffie's expression.

Generally, the majority report was a highlight review of the evidence offered by Pullman officers at the recent hearing. Leading up to its favorable finding, the report had this to say: "There is no indication that petitioner's common-carrier services are not now being operated efficiently and economically. It is important, especially in the present national emergency, that those services be maintained at the maximum of efficiency. Petitioner cannot be expected to continue to pay in expenses and taxes more than 96 cents out of every dollar earned, as it did in the last four years, and in addition bear increased wages and payroll taxes of about $6,000,000 annually, not to mention increased costs of materials and supplies, without jeopardizing the maximum war effort."

Return Will Be Only 1.91 Per Cent

The 10 per cent increase, it was estimated, will produce additional annual gross revenue of $6,171,186. Of this, $2,979,517 would be payable to the railroads under operating contracts and $989,417 as additional income taxes, leaving Pullman a net increase of about $2,202,252. The latter "will probably raise the annual rate of return of petitioner to no more than about 1.91 per cent of value."

Commissioner Mahaffie thought that Pullman had justified "at the most" one-half of the increases sought. In his opinion, the increases should be discounted to the extent that the company "has failed to stop revenue leaks." He went on to say that in 1940 Pullman furnished free accommodations to 464,293 passengers, which figure "represents about three per cent of the total who utilized its facilities." In value, Mr. Mahaffie suggested, "it represents a much larger percentage of the total"; for "people with passes which entitle them to drawing rooms in standard Pullman cars are not likely to make a habit of utilizing either the less expensive tourist facilities or upper berths." This and other factors, he added, may produce such results that "it might not be far wrong to assume that the entire 10 per cent increase now sought would be unnecessary if the applicant collected its tariff charges for all and not merely a part of the service it furnishes."

Another aspect of the situation which Mr. Mahaffie discussed was that arising from the fact that railroad officers who are Pullman pass holders are also negotiators with Pullman on operating contracts and with "its affiliated car manufacturing company" on equipment purchases. "Under these circumstances the propriety of extending to persons in such positions free privileges of considerable monetary value might well have consideration," Mr. Mahaffie said.

Commissioner Patterson was sure that the revenue effect on Pullman of eliminating all free or reduced-rate accommodations, as estimated by Commissioner Mahaffie, "is greatly exaggerated." "It is well known," said Mr. Patterson, "that railroad employees, as distinguished from railroad officers, are not permitted to reserve space in sleeping cars, and that they usually occupy space that would not otherwise be used. Railroad officers frequently use space in sleeping cars on official business instead of using their business cars, thus effecting a substantial saving in transportation expense. That expense would not be saved if free transportation were eliminated. Most of the employees now traveling free would no doubt stay at home or utilize cheaper means of travel if free passes were denied them. I am sure that no fewer Pullman cars would be operated . . ."

Tank Cars Are Rollin' These Days

WASHINGTON, D. C.

COMMENTING on this week's War Production Board order curtailing by 20 per cent gasoline deliveries to service stations on the Atlantic Seaboard and in Oregon and Washington, Petroleum Coordinator Ickes listed "the extraordinary movement by tank car" as perhaps "the most spectacular" of the continuing steps taken to correct the situation. Previously, Mr. Ickes had issued his usual weekly report, announcing that "tank car movement of petroleum and petroleum products to the Atlantic Seaboard mounted to a new high during the week ended March 7, reaching the unprecedented total of 435,086 barrels daily."

Behind the results thus hailed by the petroleum coordinator is the effective work of the railroads and the Car Service Division of the Association of American Railroads, who, with no illusions about the size of the petroleum transportation job they would have to assume, last year accepted responsibility for the program, speeding up the movement, loading and unloading of tank cars, and assisting in the distribution of these cars, al-

though 93 per cent are owned by private car lines. Moreover the railroads established drastically reduced rates on petroleum products to meet the necessities of the defense and war programs.

For every tank steamer transferred to United States' allies or sunk by the enemy, 210 tank cars had to start rolling. That they did roll is shown by monthly data comparing the 1941 and 1940 miles-per-car-per-day of privately owned tank cars. Those figures follow:

	1940	1941
January	30.4	29.2
February	29.2	30.0
March	29.3	32.3
April	29.9	34.6
May	31.2	35.9
June	32.3	37.0
July	31.0	39.5
August	31.5	41.7
September	32.6	44.7
October	32.9	49.1
November	31.8	46.6
December	30.8	41.0

The foregoing figures indicate that when the situation became acute in mid-1941 the railroads went to town, increasing the average miles per car per day from 37 miles in June to a high of 49.1 miles in October; and maintaining it above 40 miles throughout 1941's last five months. Performance figures for the first two and one-half months of 1942 are not yet available; but railroad men anticipate that they will show a continuing upward trend in the mileage made by tank cars as long-haul movements are gradually increasing. The big movement is generally from points in the Mississippi Valley to the East; and on this movement the average turnaround time of a car has been cut from 14 to 11 days, some turnarounds now being accomplished in 6 days.

The same trend is, of course, shown by the statistics of total mileage made by all tank cars. In October, 1941, the tank-car fleet made a total of 203,990,812 miles, as compared with 137,003,114 in October, 1940. Total mileage for December, 1941, was 170,603,961, compared with December, 1940's total of 128,103,950. The latest count of tank cars showed 143,140 of which 9,004 are railroad owned; the balance, all privately owned, include 37,339 that were designed for other than petroleum, but many of these have been diverted to the oil movement.

In directing the program under which the railroads have made good on the petroleum transportation job, the Car Service Division has worked closely with the Office of Petroleum Co-ordinator, the Office of Defense Transportation and the oil companies. The program now being actively followed includes:

1. Solid trains of loads and empties moved speedily on main tracks and through yards and terminals.
2. Block billing of empties from unloading points in large groups, rather than billing cars out individually, considerable saving in switching time resulting.
3. The same blocking plan of distributing empties at the larger loading points.
4. Substitution of direct for circuitous routes.
5. Concentration of crude oil movements to Eastern ports on one good route to each point rather than dividing considerable tonnage over two, three, or even four, routes. This permits trainload handling of loads and empties.
6. Sunday and holiday switching and train service to meet expanded activities of the oil industry.
7. Construction of new track and facilities by the railroads to meet increased demands at loading and unloading points.
8. Close supervision by carriers of principal movements, especially of crude oil in trainload lots.
9. Substitution by oil companies of tank trucks for tank cars on short-haul movements.
10. Assignment by private car owners of mechanical men at the principal loading and unloading points. This has been a real time-saver, permitting uninterrupted loading and unloading.
11. Study of distribution practices to measure possibilities of solid trainload movements to distributing points where storage unloading will be feasible and tank trucks used to serve smaller communities.

The aforementioned movement from Mississippi Valley, Texas and Oklahoma territories into the East has provided the real test. Normally the great bulk of long-haul transportation of petroleum and petroleum products had been by tanker and pipe lines, with rail transportation limited generally to distribution from refineries, ports, and pipe line terminals for relatively short distances. Of approximately 1,700,000 barrels formerly used daily in the East, the tankers brought in 95 per cent. Thus there were misgivings last year as to whether the railroads could step up their deliveries to 200,000 barrels a day. Yet that figure was more than doubled in the week ended March 7, when, as noted above, 435,086 barrels per day moved by rail. This involved the loading during the week of 13,536 tank cars. Present indications are that the movement may soon have to be stepped up to something like 600,000 barrels or 3,000 car loads per day. Meanwhile, the problem of movement from California and intermountain territories to the Pacific Northwest is only slightly less acute, requiring an increasingly heavy tonnage as more tankers are displaced by rail service.

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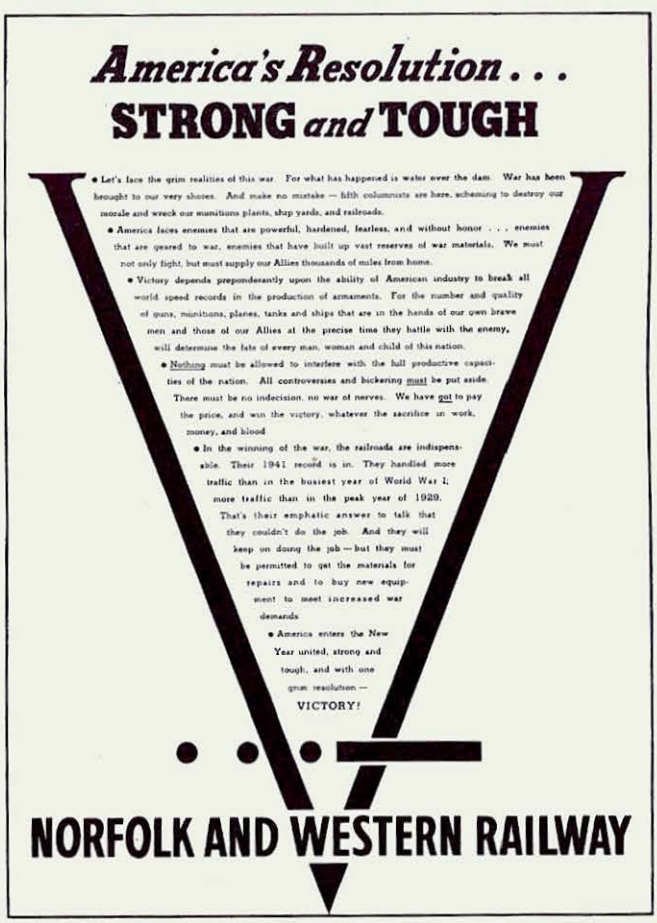

America's Resolution . . .
STRONG and TOUGH
• Let's face the grim realities of this war. For what has happened is water over the dam. War has been brought to our very shores. And make no mistake — fifth columnists are here, scheming to destroy our morale and wreck our munitions plants, ship yards, and railroads.
• America faces enemies that are powerful, hardened, fearless, and without honor . . . enemies that are geared to war, enemies that have built up vast reserves of war materials. We must not only fight, but must supply our Allies thousands of miles from home.
• Victory depends preponderantly upon the ability of American industry to break all world speed records in the production of armaments. For the number and quality of guns, munitions, planes, tanks and ships that are in the hands of our own brave men and those of our Allies at the precise time they battle with the enemy, will determine the fate of every man, woman and child of this nation.
• Nothing must be allowed to interfere with the full productive capacities of the nation. All controversies and bickering must be put aside. There must be no indecision, no war of nerves. We have got to pay the price, and win the victory, whatever the sacrifice in work, money, and blood.
• In the winning of the war, the railroads are indispensable. Their 1941 record is in. They handled more traffic than in the busiest year of World War I; more traffic than in the peak year of 1929. That's their emphatic answer to talk that they couldn't do the job. And they will keep on doing the job — but they must be permitted to get the materials for repairs and to buy new equipment to meet increased war demands.
• America enters the New Year united, strong and tough, and with one grim resolution —
VICTORY!
NORFOLK AND WESTERN RAILWAY

This is a Reproduction of a Full-Page Advertisement Which the N. & W. is Currently Placing in Magazines and Newspapers

F. L. C. Bond
President

H. R. Clarke
President-Elect

W. S. Lacher
Secretary

Engineering Officers Study Demands of War Traffic

Large attendance demonstrates desire to secure help in meeting problems of enlarged programs and shortages of materials and labor

MARKED by an attendance of railway men that has been exceeded only twice in the last five years and then by margins of less than seven per cent, the Forty-third Annual meeting of the A. R. E. A. was held at the Palmer House, Chicago, on March 17-19. Meeting for the first time since the entrance of the United States in the war, the sessions were characterized by a serious intention of purpose that reflected the period of stress through which the railways are passing, with problems that are certain to be complicated by peak traffic and by the largest improvements and maintenance programs since 1930 in the face of shortages in both labor and materials. While the meetings of this association have long been characterized by their studious character, the meeting this year took on an added degree of seriousness as those present, with heavier responsibilities than have faced them since the first World War, were impressed time and again by features of the program, with the important part they must play—and play successfully, in meeting the demands of the country for adequate wartime rail transportation.

The meeting included two general sessions on Tuesday, on Wednesday and on Thursday for the presentation and discussion of committee reports, to hear addresses, and to transact routine association business. Altogether, a total of 25 standing and special committees presented reports on 115 subjects relating to tracks, bridges, buildings, water service, signals, mechanical equipment and work organizations. To a degree larger than usual, these reports reflected the changes that have taken place in recent years in equipment, materials and operating methods, and also the enlarging interest of association members in research and tests in the solution of their problems.

Special features of the program included an address by Joseph B. Eastman, director, Office of Defense Transportation, who spoke at the afternoon session on Tuesday on What Is Expected of the Railways; and an address at the morning session on Tuesday by Andrew Stevenson, chief of the Transportation branch of the War Production Board, in charge of the allocation of critical materials to the railways on What the Railways May Expect in Maintenance Materials.

Approximately 750 persons gathered for the annual luncheon on Wednesday noon at which Dr. H. J. Cody, president, University of Toronto, Ont., spoke on the social, religious and political aspects of the present war, which he characterized as "a war in defense of civilization." He urged especially a spirit of unit between the people of the United States and Canada in the prosecution of their common program and pleaded for the determination on the part of both countries to gird themselves immediately for the maximum effort necessary to bring victory.

Coincident with the Annual meeting, the N. R. A. A. held its thirty-first annual exhibit of equipment and materials of special interest to railway engineering and maintenance officers. This year, the exhibit, as reported in detail elsewhere in this issue, was held in the Exhibition Hall of the Palmer House, on a mezzanine floor adjoining the meeting area.

All of the general sessions of the convention were presided over by President F. L. C. Bond, vice-president and general manager of the Central region of the Canadian National, assisted by Vice-President H. R. Clarke, chief engineer maintenance of way of the Chicago, Burlington & Quincy, and W. S. Lacher, secretary. The secretary's report showed that the receipts of the association during the year exceeded disbursements by $3,048.95, and that the membership as of March 1, 1942, totaled 1,943, a net gain of 34 over last year. Registra-

tion at the convention included 600 members and 535 guests, a total of 1,135, which compares with a registration of 692 members and 526 guests, a total of 1,218 last year, and 719 members and 483 guests, a total of 1,202, in 1940.

New Officers Elected

At the afternoon session on Wednesday, announcement was made that, as the result of the letter ballot to members, the following officers have been elected for the ensuing year: President, H. R. Clarke, chief engineer maintenance of way, Chicago, Burlington & Quincy System, Chicago; Vice-President to serve two years, F. R. Layng, chief engineer, Bessemer & Lake Erie, Greenville, Pa.; directors, G. L. Sitton, chief engineer maintenance of way and structures, Eastern Lines, Southern, Charlotte, N. C.; R. A. Van Ness, bridge engineer, Atchison, Topeka & Santa Fe System, Chicago; C. E. Smith, vice-president, New York, New Haven & Hartford, New Haven, Conn.; members of Nominating committee, E. W. Caruthers, assistant engineer, Pennsylvania, Philadelphia, Pa.; W. G. Arn, assistant engineer, Illinois Central, Chicago; L. L. Adams, engineer maintenance of way, Louisville & Nashville, Louisville, Ky.; G. N. Strachan, assistant engineer, Atchison, Topeka & Santa Fe, Chicago; and A. E. Botts, assistant engineer maintenance of way, Chesapeake & Ohio, Richmond, Va. In addition, W. F. Cummings, chief engineer, Boston & Maine, Boston, Mass., and vice-president of the association, was advanced automatically to senior vice-president, succeeding Mr. Clarke.

President Bond Stresses Part of Association in War Effort

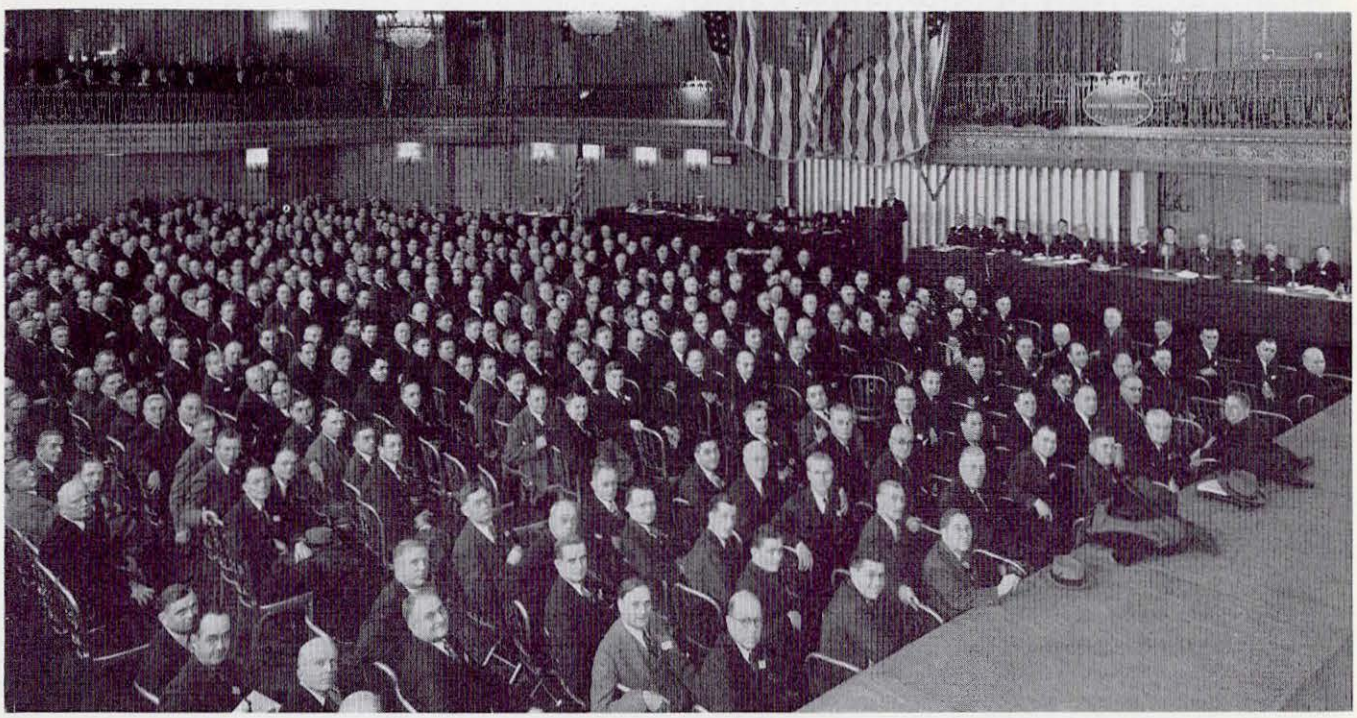
In his presidential address, President F. L. C. Bond reviewed the activities of the association during the year, spoke of the new responsibilities that rest upon every member as the result of the war and of the amended procedure to permit "emergency action" on the part of the association in meeting emergency demands for temporary revisions of specifications, and urged that the association, and its members individually, dedicate their talents and resources vigorously toward the one primary and paramount objective—to win the war. He said in part as follows:

"In opening the Forty-Third Annual meeting, we are assembled under a stress of circumstances which compels every member of our association, and, likewise of our profession, to regard his civil responsibilities as national service, and his regular sphere of duty as his 'Action Station.' Our association has earned a reputation for high achievement, the basis for which is an extraordinary system of voluntary co-operative effort. Because of this, the association possesses a high degree of 'going concern' value, which constitutes a substantial reserve on which to draw during difficult times.

"While it is true that our original objective and plan of procedure have been based upon rendering service to the railways in normal times, nevertheless, it is probably more than a coincidence that this association was brought into being in 1899, or immediately after the shortcomings of the railways were brought into sharp relief during the Spanish-American war. However, such progress was made by the association in the ensuing years that, from the outset of the first World war, we were able to offer much that was of direct military value.

"Thus it seems that, whereas the present war necessarily affects the activities of our association, its usefulness and adaptability to meet the demands made on it make us part of the war machine. Possibly the first evidence of this in the present situation was the marked increase in the demand for our Manual—and there can be no better evidence of the recognition of our recommended practices.

"On the whole, the service which the A. R. E. A. performs is something which is does efficiently, yet unobtrusively; it serves as a reservoir from which to draw qualified personnel for special advisory technical committees, usually to perform some special service on short notice. Recently, one such committee was formed to



The A.R.E.A. Meeting in Session on Tuesday at the Close of the Address by Joseph B. Eastman

consider temporary revisions of specifications for track materials; another is engaged in an emergency study of ways and means of reducing the consumption of rubber; one of our regular committees was asked to arrive at a prompt conclusion as to the affects of restrictions on the use of soda ash in the treatment of water.

"The temporary revisions of the specifications for track materials referred to were undertaken at the instance of the War Production Board, which has created an organization to develop national emergency steel specifications. The object of such revisions is to step up production and relieve certain critical conditions.

"Because of time limitations, emergency action of this nature will not permit of the usual prescribed procedure. Accordingly, your Board of Direction has adopted an exceptional course of action and has authorized emergency revisions of matter in the Manual upon affirmative letter-ballot of the interested committees. Revisions so authorized will be effective only for the 'duration' and will be published as colored-sheet riders on the documents they modify. None of these changes will be made in the actual sheets of the Manual unless they are approved by the association in accordance with regularly authorized procedure. These are but a few illustrations of what must be expected in a constantly increasing measure. We fully realize that we are confronted with an entirely new set of conditions, but happily, conditions with which we stand prepared and qualified to deal.

"This attitude is equally important with respect to the regular assignments of our standing committees—that work must go forward. We must keep on with those continuing studies which lead to distinct improvements in the service of the railroads under all conditions. Nevertheless, and in complete accord with all institutions throughout the Allied nations, we will assuredly and vigorously dedicate our entire talents and resources toward the one primary and paramount objective—to win the war."

Andrew Stevenson—WPB Announces New Maintenance Rating

In an address before a crowded session on Tuesday morning, Andrew Stevenson, chief of the Transportation and Farm Equipment Branch of the War Production Board, presented a comprehensive picture of the material situation which faces the railways, highlighting his remarks with an announcement that the WPB had just approved a plan to assist the railroads in obtaining materials for the maintenance of equipment, tracks and other structures. The new order, he pointed out, is designed especially to relieve the present difficult problem of securing materials for maintenance, by granting a rating as high as A-1-a for materials required for the emergency repair of equipment and tracks, a rating of A-3 for materials for essential maintenance, an A-8 priority for less important maintenance and operating supplies.

After describing the priority system under which the railways have been operating, including Order P-8, under which freight cars are built and repaired; Order P-20, under which locomotives are built; Order P-21, under which locomotives are repaired; and Order P-19-a, which covers railroad construction projects; and P-100, the almost all-inclusive industry maintenance, repair and operating supply order, Mr. Stevenson said in part as follows:

"A description of the priorities picture surrounding the railroads indicates that some of the functions of railroad transportation are obtaining inferior treatment in comparison with others. Freight cars have an A-3 priority available, but passenger car maintenance must depend largely on an A-10 rating contained in Order No. P-100. Despite the vital part played by the maintenance of way department, track and structure repairs are also in the A-10 rating category. From the standpoint of the War Production Board, the picture also has not been satisfactory. Blanket preference ratings, like the A-3 assignment in Order No. P-8, usually have definite inventory controls, but none of the railroad preference orders have such controls. The needs of the railroads and the War Production Board inventory control requirements have necessitated the preparation of another railroad order.

New Maintenance Rating Announced

"Accordingly, the War Production Board is now issuing an overall railroad maintenance, repair and operating supplies preference rating order designated No. P-88. This order is not in use at this time because of the mechanical details incidental to forwarding and obtaining acceptances from the railroads, but it has been issued, will shortly be available, and all of the railroads should be operating under its benefits and requirements within a few weeks.

"Order No. P-88 contains preference rating assignments that may be applied to all of the maintenance, repair and operating supplies required by the railroad operating thereunder. There are four separate assignments of peference ratings listed as follows:

"First—A-1-a preference rating for the delivery of materials needed for emergency repairs.

"Second—An assignment of preference rating to deliveries of raw materials by calendar quarters, this assignment to be determined by the Division of Industry Operations of the War Production Board after consideration of requirements as submitted by the railroad on Form PD-351, in conjunction with a statement of inventory condition presented on a complementary Form PD-352.

"Third—A-3 preference rating for the delivery of materials essential for tracks, structures, signals, communication systems, train and locomotive maintenance, repair and operation, including perishable tools, but not including materials listed in sections mentioned previously.

"Fourth—A-8 preference rating for the delivery of other maintenance, repair and operating supplies.

"The inventory control is obtained by means of quarterly forms, and the use of all the preference rating assignments is predicated on compliance with this requirement.

"Order No. P-8 and P-21 have been extended to April 30, 1942, to allow for the interim between the issuance of Order No. P-88 and its acceptance by all of the railroads. The Orders No. P-8 and 21 will not be extended further; when a railroad accepts Order No. P-88, it is not allowed to use preference ratings assigned by Orders No. P-8, 21 and 100. The builders of freight cars and locomotives are being directed to begin operation under the Production Requirements Plan, but to take care of the latter during the transition period under Orders No. P-8 and P-21. Order No. P-20 has also been extended to April 30, 1942. Special requests for preference ratings and requests for priority assistance to apply on the delivery of new equipment will continue to be made on Form PD-1A. New construction will still be handled by means of Project Preference Rating Order No. P-19a.

The Board of Direction of the A.R.E.A. in Session the Day Before the Convention—From Left to Right Around the Table—Assistant to the Secretary E. G. Gehrke, Secretary W. S. Lacher, President F. L. C. Bond, Vice-President H. R. Clarke, Past-President E. M. Hastings, Past-President A. R. Wilson, Past-President F. E. Morrow, Directors C. E. Smith, Elmer T. Howson, Armstrong Chinn, F. S. Schwinn and A. A. Miller, Treasurer W. H. Penfield and Director J. B. Akers

A railroad that wishes to build cars or locomotives must do so under the Production Requirements Plan, in a manner similar to that of the private builders.

Materials Not Assured

"A description of the manner in which you apply for a preference rating, so that you may order materials, is not complete, however, without some comment on whether these orders will be filled. These preferences, either under a blanket order or individual rating, do not assure the receipt of materials. They only permit the recipient to secure materials if the supply has not been exhausted by purchases on higher ratings. But to say that one does not get materials because his rating is not high enough is not a proper statement. He does not get materials because there are not enough to go around, and in the decision as to the relative importance from the war effort of which purchaser is to have his order filled, he is placed down the list. The preference rating system is only the mechanics for the expression of this relative importance and the filling of orders accordingly.

"Obviously, the only way in which any purchase of material would be assured is through a direct 'earmarking,' or segregation or allocation of the material. To do this, however, requires, first, a determination of the amount of material needed, and second, a determination that up to such amount this particular need shall transcend all others. These determinations are primary; the getting of the material to the proper person becomes only a matter of mechanics and can be handled in several ways. P-88, with its individual report forms and individual ratings, is one way. The combination of P-95, the farm preference order, and L-26, the farm limitation order, is another. P-80, the Production Requirements Plan for manufacturers, is a method, and so is P-20, with its control and scheduling of locomotives.

"In order to make the determinations which must precede this sort of assistance seeking to assure materials, rather than merely condone their purchase if possible, The Supply Priorities and Allocations Board, and now the War Production Board, has presented to it for approval, 'programs' calling for definite amounts of specified material during designated periods. Programs for the railroads for the first quarter of 1942 are in effect for both the repair and construction of equipment, and for maintenance of way structures. The effectuation of the program for equipment is handled by special orders supplementing the blanket orders. The effectuation of the program for maintenance of way is handled only as to rail, through special orders. The new P-88 will permit applicability to all other items.

Rail Allotment Cut

"You are aware of the extent of the first quarter programs. They called for 1,787,000 tons of material for the repair and construction of equipment, providing for 36,000 new freight cars and continued work on 936 locomotives, and 900,000 tons of material for maintenance of way and structures. Of the latter amount, 538,000 tons were specified originally for rail, during the first quarter, but were subsequently revised to 350,000 tons. Later it developed that special demands for particular items were so serious that the rail tonnage approved could not be secured during the first quarter, and, in fact, little if any rail was first scheduled to be rolled in the month of March. The situation has been reviewed vigorously during the last two weeks, and 150,000 tons are now scheduled for March delivery. The designation of the roads to receive this tonnage has been made in so far as possible to accord with the prorate provisions of the original program. The Transportation branch is now reviewing the requests for relayer rail and shortly will call upon the recipient roads for their proportionate contribution.

"Recommendations for material for the balance of the year are being made to the Board by the Director of Defense Transportation and shortly will come up for consideration and determination. Maintenance material for each railroad will then be allotted through P-88 in keeping with the over-all commitment contained in the Board's determination.

Fullest Utilization Demanded

"It cannot be emphasized too strongly that the assurance of materials provided through these programs carries with it a responsibility that every pound be utilized to the fullest extent. The ever-increasing demand for war goods, which is the nation's primary concern, will

involve the major portion, if not all of certain kinds of these critical materials. Their use in railroad maintenance where adequate substitution or elimination is possible, of course, cannot be countenanced. In this, much has been done by the railroads in finding substitutes, or in changing specifications which will save metals completely. You are aware of the increasing number of these actions, but, I urge you to exert extraordinary vigilance in the continued pursuit of these savings, of putting them into practice promptly, and of preventing undue accumulation of inventory.

"I believe that you are beginning to appreciate the situation that prevails. This is evidenced by the decreasing number of applications for material for such items as new passenger station facilities; for new sanding and coaling stations where old facilities are still usable, or where comparable facilities exist on adjacent roads in the same terminals; for the replacement of still serviceable trestles; and for grade crossing eliminations—why these should be essayed at this time I do not know. Still further suggestions and conservation projects from you are, however, in order, and I hope that your meeting in Chicago this week will be of vital moment in this regard. I commend for your serious consideration such subjects as the elimination of steel and cast iron pipe, and substitution of locally available tile, unreinforced concrete and wood boxes; the use of lighter track accessories, particularly around turnouts and crossovers; the return to use of 24-in. rail joints; the use of open-hearth steel in track and structural designs in place of alloys; and the elimination of rubber."

At this point, Mr. Stevenson asked maintenance men to lay their new rail as rapidly as received in order to make released rail available to the army for camp and ordnance plant construction; spoke of the recent "freezing" order affecting crawler-mounted equipment, and the possibility that little new work equipment will be available to the railways; urged the conservation and extensive use of present materials and equipment; and then, in closing, said:

"Out of sessions like these have come, and I know will continue to come, practical ideas and helps which will go far in freeing more and more material for use in constructing more and more tanks, planes, guns, and ships. For only in the production of these war goods —production now—will this war be won."

Discussion

Responding to Mr. Stevenson's address on behalf of the association, C. E. Smith, vice-president in charge of purchases and stores of the New York, New Haven & Hartford, and a director of the association, commended Mr. Stevenson for his comprehensive treatise of the subject at hand and his sympathetic and helpful understanding of the needs of the railways for essential materials. He pointed out that the railways, at the hands of the Office of Production Management, and now the War Production Board, had fared well, relatively, thus far in the receipt of needed materials and equipment, citing the present favorable inventories of the railways, and then, referring to the new P-88 order announced by the speaker, saw in it still more favorable treatment, particularly in more prompt deliveries. This latter, he said, will make it less necessary for the roads to rely on their immediate inventories. In spite of this more favorable situation in prospect, Mr. Smith urged members, in the light of the huge needs of our armed forces and those of our allies, to exercise the strictest conservation of materials, the most serious self denial in ordering new materials, and the closest discernment between "what we want and what we need."

Joseph B. Eastman Asks Railroad "Super-Performance"

Speaking before an audience that filled to capacity the Grand Ballroom of the Palmer House, Joseph B. Eastman, director of the Office of Defense Transportation, told his listeners that one of his duties is to assure that the carriers receive the materials and equipment necessary to enable them to carry the steadily increasing burden of traffic. Yet he warned that there will be no abundance of such materials and equipment, and that, in fact, the stocks that may be found to be available may be such as to make it difficult for the railroads to fulfill the demands made upon them. Mr. Eastman spoke in part as follows:

"Transportation plays a peculiarly vital part in the war effort. It enters into modern production at every stage, from the time the raw materials leave the ground until the finished product reaches its final destination. Troops and munitions would be useless without transportation, and so would the workers in our great new war-production plants. No one who gives a moment's thought to the matter can possibly doubt that, of all the indispensable parts of the war effort, transportation is the most extensive and pervasive.

What's Ahead

"All this is so clear that it needs no demonstration. Yet there is danger of trouble ahead for our transportation service. Nor is it difficult to understand whence this danger comes. Disregarding the rubber shortage for the moment, we are undertaking to create, in a time incredibly short for such an undertaking, armaments which will surpass the combined armaments of our enemies, and also the huge flotillas which will be necessary to transport both armaments and men through seas full of peril, to the theatres of action. Inevitably, those in charge of these mighty production programs look for every possible means of carrying them through, and inevitably, also, their eyes fall upon the well-equipped manufacturing plants which supply the railroads and other branches of the transportation industry with equipment and other facilities, such as steel rails.

"It seems that some may entertain the idea that a shortage of transportation is something that the country can endure, like a shortage of sugar, without harm to the war effort. So far as the transportation of passengers is concerned, this may, within limits, be true, but I fear that it is not true when it comes to the transportation of freight.

"The production of commodities that may be classed as luxuries, or even as non-essentials, is rapidly being discontinued in favor of war production. We are approaching a time when the freight traffic that our carriers will be called upon to move will be made up mostly of commodities that enter into the war effort in one way or another, and the balance will be commodities, like food and clothing, that are essential to the well-being of the population. Assuming that there will still be some small room for shrinkage in that civilian balance, which may be doubted, will it be possible to segregate the transportation of such commodities from the transportation of those which go to make up the war effort?

"Certainly I question the feasibility of earmarking at

its origin the coal destined for steam and by-product plants as between that which is to be used in war production and that which is to be used for civilian supplies; and the same may be said of ore, cement, and other raw materials. Nor do I believe it is possible to earmark at their source our agricultural products as between those which are essential in one way or another to the war effort of ourselves and our allies, and those which we might perhaps dispense with if we all tightened our belts. As for manufactured products, if any remain which are not essential to war production or to the well-being and morale of the people, manufacturers would be in a sorry plight, if they were to be allowed to produce such articles and then were to find that these articles could not be moved to points of consumption.

Must Maintain Fluidity of Service

"Also, the efficient conduct of transportation requires that the carriers maintain their service in a state of the utmost fluidity. This requires the best efforts of both the carriers and the shippers. The new records which the railroads established in 1941, were made possible by such efforts on the part of both. Once a shortage develops, these favorable conditions will be impaired at once. Shippers will become disturbed and panicky. They will order more cars than they need, in the hope that in that way they can forestall the effect of the shortage. The carriers will find it necessary to watch shipper demands closely. The attention of both will be diverted from the vital thing, which is to keep the cars in rapid circulation. If priorities and embargoes ensue, a large administrative organization will be necessary and it will be hard to avoid confusion worse confounded. No one who has ever experienced a general car shortage can look forward to another with anything but foreboding. Under such conditions, in my judgment, transportation will inevitably become less fluid, and there will be a slowing down and impairment of general efficiency which will be bound to react on the war effort.

"It is a part of my duty in my present position to do everything that I can to see to it that the carriers receive the materials and equipment which are necessary to keep their properties in prime working order and to enable them to meet the steadily increasing traffic demands. Yet I must extend the warning that there will certainly be no abundance of materials and equipment, and that with such stocks as may be made available the carriers will be hard put to maintain the record of 100 per cent service which they, to their eternal credit, have thus far so splendidly maintained.

Must Conserve Materials

"The rubber shortage is the greatest threat to future transportation service, for if highway automotive vehicles should cease to be the important factor in transportation which they now are, a crushing load will fall upon the railroads. The problem there, as I see it, is to keep the present vehicles, insofar as they now perform essential transportation service, functioning until such time as the creative genius of the country can furnish new supplies of synthetic or other rubber to take the place of the supplies which have gone. This means the conservation of tires and vehicles in every possible way and the elimination of all wasteful operation. Although this is primarily a motor-carrier subject, I want to remind you that most railroads nowadays, directly or indirectly, use the motor vehicle extensively in their own operations and will find themselves in a very trying situation if they are deprived of such use. Conservation of tires and vehicles is, therefore, something which the railroads must perforce take to heart.

"Turning to a subject that is of more immediate concern to railroad engineers, it is quite clear that the roads will not have all the rail and track materials that they would like to have, or even that they will actually need. It will, therefore, be necessary for them to use what they can get in the best possible way and with the demands of the war effort uppermost in their plans. The problem will be to produce the greatest possible improvement of transportation facilities per unit of material used. Projects that may appear desirable from a long-range point of view may have to be discarded in favor of temporary makeshifts which will contribute at once to the efficient handling of the war traffic. It will require constant vigilance, imagination, and foresight.

"It will also be necessary, in order that materials may be made to go as far as possible and that equipment and other facilities may be constructed with the greatest conservation and economy of plant operation, to pay more attention to standardization and simplified practice. This was one of my obsessions when I was Federal Coordinator of Transportation. Not much success attended my efforts at that time, and no doubt many railroad men disagreed with my views for reasons which they then believed to be sound. But what may be good practice in peace time is not necessarily good practice in time of war. I submit that present conditions do not permit the luxury of all manner of special designs and specifications. This is true of cars and locomotives, and I am glad to say that this fact is being given practical recognition, to a very considerable extent, in the cars and locomotives which are now under construction. But it is also true of such things as joint bars, tieplates, spikes, frogs, switches, etc. Recommended practices have been established and they must be followed for the good of the cause. It will also be necessary, in many instances, to use substitute materials, as, for example, malleable iron in place of cast steel, and much ingenuity will be required in that connection.

Closer Co-operation Needed

"Perhaps it is too much to hope, but I cannot help hoping, that out of all this will come an impetus to the establishment by the railroads, after the war is over, of a centralized department of scientific and engineering research. I am confident that such a department could be of great value to the railroads, not only in the reasonable promotion of standardization and simplified practice, but also in the best development of new types of equipment and improved operating practices.

"While our railroads are owned and operated by many separate companies and keen competition exists among them, nevertheless, they are also operated to a considerable extent as a system. This is true particularly of freight cars, which circulate freely all over the country, and of the functioning of the Car Service division of the Association of American Railroads. For the duration, this idea of unified system operation and co-operation must be emphasized, with less stress on the competitive side. There will be increasing need for sharing locomotives and passenger cars, as well as freight cars, and for the pooling of various facilities and resources.

"We must use to the maximum everything that is available for use, and there is no way in which this maximum use can be attained without resort to the principles of co-operation and co-ordination. As you know, the Department of Justice has recognized the need for co-operation, co-ordination and joint action under present

emergency conditions, and has pointed out the way in which, with the help of the Office of Defense Transportation, these desirable results can be accomplished. We shall endeavor to give that necessary help and direction.

"Coming back to the field of engineering, we are all familiar with the extraordinary feats which engineers are performing in the military operations that are being conducted all over the world. Much of the success which our enemies have so far achieved has been bottomed on the creative imagination of engineers and their ability to solve, with marvelous versatility and rapidity, the problems which continually arise, not only in the construction, maintenance and operation of the modern machines of war, but on the field of battle. The engineers of this country must, and I know that they will, match and surpass those of our enemies in such performance. But what we should bear in mind is that the need for such creative imagination, versatility and ability to deal quickly and successfully with sudden emergencies is not confined to the military operations at the front. It extends back of the line to every phase of industrial operation, and particularly to transportation.

"The phrase 'on the alert' applies to transportation in war time quite as much as to situations like Pearl Harbor. It is no time for old routines or ponderous deliberations or set ways of thought. Before we are through, occasions will arise continually which will call for all manner of improvising on the spot and the use of plans and devices unheard of before. One good thing that war does is to stimulate the creative mind to such activity, with results which often remain to benefit mankind after the emergency has passed. I call upon railroad engineers to remember that they have as vital a part in the war effort as our soldiers and sailors, and to be 'on the alert.' Their country must have, not good performance, but superperformance. I am sure that they can hold up their end."

Discussion

Rising in behalf of the association to thank Mr. Eastman for taking from his burdening official duties to come to Chicago to address the meeting, E. M. Hastings, chief engineer of the Richmond, Fredericksburg & Potomac, and a past-president of the association, paid high tribute to the speaker as a long-time friends of the railways, and the best equipped man in the country by understanding and experience to direct and correlate the efforts of the railways in their determination to meet the war-time transportation needs of the nation. For the members of the association, he pledged whole-hearted support and co-operation to Mr. Eastman in his program to the end that the railways will not fail to meet all demands that may be made on them.

Report on Standardization

F. L. Nicholson, Chairman*

The work of this committee is covered by three assignments, namely: (1) What A. R. E. A. recommended practices should be advocated for general use on railways; (2) What A. R. E. A. recommended practices should be sponsored as subjects for national standardization; and (3) To maintain contact with standardization bodies and keep the association informed on important matters developed by such contact. Under its first assignment the committee called attention to the fact that in 1937, and again in 1940, it had submitted a tabulation of recommendation practices that were thought adaptable to general use on all railroads in the interests of uniformity of practice, economy and efficiency. A similar list was presented again this year with the recommendation by the committee that, because of general conditions now affecting materials and labor, favorable consideration be given to the adoption by individual roads of the recommended practices included therein.

Reporting on its second assignment, the committee stated that the Committee on Yards and Terminals had recommended for national standardization two sets of specifications now appearing in the Manual. These are the specifications for the manufacture and installation of four-section, knife-edge railway track scales, and specifications for the manufacture and installation of two-section, knife-edge railway track scales.

Under its third assignment, the committee presented (a) a list of representatives of the Association of American Railroads serving on the Council of the American Standards Association and on its Correlating and Advisory committees; (b) a list of technical projects on which the A. A. R. is now cooperating with the American Standards Association, through representatives of the Construction and Maintenance and Electrical sections of the Engineering division; (c) a list of collaborating representatives of the A. R. E. A. on committees of the A. S. T. M.; (d) a summary of the activities of the A. S. T. M. during the year 1941 which were of special interest to railroads; and (e) a summary of the activities of the Canadian Engineering Standards Association during the year 1941 of special interest to the railroads.

The report was received without discussion.

* Chief Engineer, Norfolk Southern.

Signals and Interlocking

H. G. Morgan, Chairman*

The committee submitted progress reports, offered as information, on both of its assignments, which are (1) to report on developments in railway signaling, and (2) to keep the association informed of the principal current activities of the Signal section, A. A. R. Under its first assignment the committee presented brief descriptions of several new developments including the introduction of means for handling C. T. C. and telephone communication over a single pair of wires at the same time; the development of a voice communication system for use between yard offices and switch-engine crews; and the introduction of the "reverse code" as a means of utilizing coded track circuits to control approach lighting, approach energization of cab signal energy, etc., without the use of line wires.

Under its second assignment the committee again called attention to the fact that there are now available 23 of a series of 24 pamphlets on American railway signaling principles and practices, that have been prepared for the education of signal men and others desiring to study this subject. Also, the committee presented a list of 36 subjects on which committees of the Signal section made reports at the 1941 meeting. In addition, it listed the revised and new specifications, drawings, requisites, instructions and miscellaneous matter that have been submitted to letter ballot, and also the matter that has been submitted to letter ballot for removal from the Manual.

There was no discussion of this report.

Report on Electricity

H. F. Brown, Chairman†

Progress reports, submitted as information, were presented by this committee on both of its assignments, which are to keep the association informed (1) of developments in the application of electricity to railway service, and (2) regarding the principal current activities of the Electrical section, Engineering division, A.A.R.

Reporting on its first assignment, the committee stated that the past year has been one of increased activity along previously developed lines, rather than one featuring new developments in the application of electricity to the various branches of railway

* Signal Engineer, Illinois Central.

† Assistant Electrical Engineer, New York, New Haven & Hartford.

service. Pointing out that, while research still continues, the introduction of new methods and new apparatus is necessarily retarded by the need for increased production along existing lines, the committee said that improvements have been made in circuit-breaker design, electrical welders, electrically-operated roadway maintenance tools, and in lighting units, notably in fluorescent lights. Also, additional installations have been made of sodium lamps at grade crossings, and experiments have been conducted with neon tubes as a means of marking grade crossing gates.

In accordance with its usual practice regarding its other subject, the committee submitted brief synopses of the various committee reports that were presented at the last meeting of the Electrical section. These included the reports of the Committees on Power Supply, Overhead Transmission Line and Catenary Construction, Standardization of Apparatus and Materials, Electric Heating and Welding, Application of Motors, Clearances for Third Rail and Overhead Working Conductors, Track and Third-Rail Bonds, Illumination, High Tension Cables, and the Application of Corrosion Resisting Materials to Railroad Electrical Construction.

This report was received without comment.

Waterways and Harbors

G. P. Palmer, Chairman*

This committee presented a report on one of its six assignments, the subject reported on being that relating to lands subject to servitude of navigation as affecting protection of roadbeds built or to be built on proposed dam pool areas. As its report on this subject the committee presented three statements, based on recent court decisions, regarding the legal rights of railroads in cases where railroad property is damaged by impounded water. These statements, each of which was accompanied by supporting data, are as follows:

(1) If the roadbed is built on lands lying above ordinary high water mark and water is impounded at elevations above ordinary high water mark, then compensation is due the railroad for any damage to said roadbed.

(2) If the roadbed is built on lands lying below ordinary high water mark, then it is considered as lying in the bed of the stream, and no claims for damage can be supported even though water be impounded at elevations above ordinary high water mark.

(3) Irrespective of whether the railroad is built on lands above or below ordinary high water mark, no claims for damage to the roadbed can be supported if water is impounded up to, but not above, the ordinary high water mark.

These statements, together with their supporting data, were recommended for adoption and publication in the Manual. This recommendation was approved without discussion.

Economics of Railway Location and Operation

H. M. Stout, Chairman†

This committee submitted progress reports, offered as information, on two of its twelve assignments. One of the subjects reported on covers the committee's assignment relating to the determination of the train resistance of freight trains under various conditions of loading and speed, while the other covers its assignment relating to the development of modern power units and their effects on the economics of railway location and operation.

Freight-Train Resistance

The report on freight-train resistance is the second that the committee has made on this subject, the first having been submitted last year. In a foreword to this year's report the committee pointed out that its previous study was concluded with a statement of objectives toward which it felt that further effort should be directed, these including a continuance of the search for road test data, and, if possible, the development of a preferred general method for calculating train resistance.

In reporting this year on the progress that has been made toward these ends, the committee submitted first a summary of all train resistance references that are to be found in the proceedings since 1909. Next, it presented a mathematical analysis of the derivation of a formula for calculating a factor, applicable to the Davis general equation for train resistance, representing the effect of variable wave action arising from different rail weights and different moduli of elasticity of the rail support. The manner of incorporating this factor in the Davis formula was then demonstrated.

Following a brief discussion of the load imposed by axle-driven air-circulating fans in refrigerator cars, the committee took up the question of the influence of temperature changes on train resistance. For this portion of the study, data were obtained from railways represented by the committee membership showing the practices followed in the establishment of correction factors, variable with atmosphere temperature, for the tonnage ratings of freight trains. The data submitted were presented graphically in an accompanying chart.

The remainder of the report on this subject was devoted to a comprehensive study of the effects on train resistance of lateral forces due to side winds. This portion of the report consists of the presentation of an empirical method of determining the intensity of the lateral forces developed by side winds of varying angularity and velocity. The committee pointed out that the problem does not lend itself to analytical analyses and that for this reason reliance must be placed on such test data as are available. Because of a dearth of test data derived from examination of the aerodynamic characteristics of railway equipment, the analysis was based on the results of tests conducted by the United States Bureau of Standards on the aerodynamic characteristics of automotive equipment. Accompanying this portion of the report were numerous charts designed to aid in the understanding and use of the formula. The following concluding paragraph was appended to the report:

Unfortunately, the constant term of the suggested formula does not lend itself to analytical derivation and can only be determined accurately by test. This would involve wind-tunnel investigation of the various railway freight equipment types in combinations which could only be determined as the investigation progressed. The preceding analysis is offered as information without recommendation as to its practicability in railway operation. It does, however, indicate the importance of lateral forces and the extent to which they enter into the total resistance value. Realizing the difficulties to be overcome in defining, on a logical basis, exact values of side-wind resistance, and the constantly varying wind and locomotive directions as the train advances throughout its assigned run, it does not appear that this resistance component should be ignored when determining train resistance in the aggregate.

Effects of Modern Units

The committee's report on modern power units and the effects on the economics of railway location and operation, consisted largely of a statement of its plans for the further investigation of this subject. The committee pointed out that, in general, American railroads have been built up around the steam locomotive; hence it can be assumed that many of the changes which have taken place in the construction of roadway and track structures are due in large measure to the nature of the developments that have occurred in the design and construction of steam locomotives.

The committee said that it plans to investigate some of the important trends in steam locomotive construction and to study their effects, presenting, if possible, examples of actual cases, based on comparative cost studies, where projects have been completed and data are available. Reference will also be made to Diesel-electric and other types of motive power, and to some of the advances made in the design and construction of rolling stock.

Other Reports

In addition to the printed reports on the two foregoing assignments, Mr. Stout stated that reports had been completed on

* Engineer Maintenance and Construction, Baltimore & Ohio Chicago terminal.

† Valuation Engineer, Northern Pacific.

several other assignments but that these had not been finished in time to permit them to be printed with the remainder of the report. Among these was a report on the committee's assignment to determine the effects of speeds in excess of 75 miles per hour on the economics of railway location, which will be presented at the next convention.

Another of the completed reports that was not available for printing was one on the assignment to determine the advantage to be derived from stiffness of track in improving economics of train operation. A report on this subject, submitted as information, was presented orally by H. F. Schryver (N. Y. C.), chairman of the sub-committee handling the subject. Mr. Schryver's comments included a review of the points covered in the assignment, and a general discussion of the economics of the subject and of the advantages and disadvantages of stiff track, including the effects on passenger and freight traffic. Also, he cited the results of tests that have been conducted on various roads to determine the relative horsepower required to pull trains over tracks laid with different weights of rail. Reference was also made to the indirect or unassignable savings effected through the use of heavy rail, and the greater resistance of such rail to end batter. However, it was stated that there was a "saturation point" in the weight of rail, beyond which it would not be profitable to go. Pending further study of the subject, no recommendations were made by the committee.

Report on Highways

J. G. Brennan, Chairman*

The Committee on Highways presented reports on three of its six subjects, including a progress report, with recommendations, on Revision of Manual, a progress report submitted as information on another subject, and a final report containing Manual material on the third subject.

Revision of Manual

The committee made a number of recommendations under Revision of Manual. Pointing out that the Joint Committee on Grade Crossing Protection, A. A. R., had revised its recommended standard for highway crossing signs of the reflectorized type, by changing the background from black to white and the letters from white to black, the committee recommended that the same change be made in drawings and other material in the Manual pertaining to such signs. As exceptions to this proposed change, it stipulated that "Stop on Red Signal" and "Stop When Swinging" signs shall continue to have a black background and white letters where reflector buttons are used, but where the background is to be of a reflecting material, it shall be white or silver with black letters. It recommended further that this exception should apply also to the informative sign indicating the number of tracks.

The committee noted that drawings of the Signal section, A. A. R., showing highway crossing signals of the wigwag and flashing-light type give reference numbers for the various parts, and it recommended that the corresponding figures in the Manual be revised to show this information. Also, it pointed out that the Signal Section drawings covering reflector-type highway crossing signs have been revised by the Signal section to provide for both the synthetic enamel and vitreous enamel finish, and recommended that the latest issue of these drawings be printed in the Manual in place of the present material.

It recommended further that a figure number be added under each of the drawings in the Manual covering highway crossing signs for suspension over the highway, and added that it may be desirable to request the Signal section to assign numbers to these drawings and to include them in the Signal Section manual. In addition to those mentioned above, several other recommendations regarding Manual material were also made by the committee.

Referring to the recommendation that the background of reflector button crossbuck signs be changed from black to white and the letters from white to black, G. R. Westcott (M. P.) said it had been the experience on his road that the white background is satisfactory in ordinary daylight, but that in brilliant sunlight the buttons will have white halos around them, approximating the color of the background and obscuring the outline of the letters. This experience of his company was obtained in connection with speed restriction signs used in train service. Mr. Westcott expressed the opinion that, before the plans in the Manual are changed, further consideration should be given to the matter of changing the colors and the size and spacing of reflector buttons. Bernard Blum (N. P.), who presented the report, pointed out that the recommendations covering the colors of crossbuck signs was made only after exhaustive studies of the different combinations. Also, he said that some states will not permit the use of signs with black backgrounds. In addition, Mr. Blum called attention to the fact that the recommendations of the committee did not cover reflector buttons.

All of the recommendations of the committee under Revision of Manual were approved.

Merits of Various Types of Crossing Protection

In reporting on its assignment to determine the comparative merits of various types of grade crossing protection, the committee said that its work during the last year had been confined to the testing of two types of sheet reflectorized cross-buck signs that had been developed by private concerns for use at grade crossings. The cost of both types, it said, is substantially less than that of reflector button signs.

One of the new types of signs is known as the Scotchlite reflector and consists of a luminous material using powdered glass for reflecting light, which can be applied over either wood or metal. Several test installations of this material in crossing signs on the Baltimore & Ohio Chicago Terminal were described in the report. The other material that has been under study by the committee is known as the Decalcomania transfer process and consists of a waterproof reflecting material on a paper backing, which can be applied to a wood or metal sign by simply wetting the material, removing the paper, and applying it to the sign with a roller. A test installation of this material on the B. & O. C. T. was also described. This report was submitted as information.

Requisites for Rail-Highway Grade-Crossing Protection

One of this committee's assignments is to develop requisites for the locations, number and arrangement of automatic signals, automatic gates and auxiliary signs for rail-highway grade-crossing protection. In accordance with this assignment, the committee submitted a list of five such requisites, which it recommended for adoption and publication in the Manual. Also, the committee cited a number of changes that would be necessary in the typical location plans in the Manual for automatic crossing gates if the requisites were adopted. The requisites recommended for adoption were as follows:

(1) The word "signals" as hereinafter used includes automatic signals, automatic gates and auxiliary signs attached thereto.

(2) Signals shall give warning to vehicles for trains moving over all regularly operated tracks.

(3) A sufficient number of signals shall be provided to warn highway traffic approaching the crossing from any direction.

(4) On streets improved with paved roadways and curbing, signals shall generally be so located at the right side of the roadway that all portions of the unit clear the face of the curbing by at least 12 in. On roadways having no curbs, signals shall be located at the right side of the roadway with a minimum of 6 ft. from the center of the signals to the edge of the roadway. Highway crossings have multiple lanes with a physical division between opposing traffic lanes, may require a left side installation protecting approaching traffic in addition to the right side installation.

(a) *Right Angle Crossings And Left Hand Forward Skew Crossings.*—Signals should be located as close as practicable to the exterior railroad tracks to be protected but should have not less than 10 ft. side clearance from center line of track.

(b) *Right Hand Forward Skew Crossings.*—Signals should be located in such a position as to permit vehicles, stopping opposite the signals in any approaching traffic lane, safe clearance from the track.

(5) Where groups of tracks of the same or different railroads are separated by space sufficient to permit three or more vehicles to occupy one traffic lane with safety, each group should be given

* Engineer Grade Crossings, Association of American Railroads.

protection separately, if required, with interconnecting signals if necessary.

W. M. Post (Penna.) asked whether these requisites had been approved by the Joint Committee on Highway Grade Crossing Protection of the A. A. R. before being placed before the association for approval. This provoked extended discussion, after which the requisites were approved with the understanding that they would be submitted to the Joint committee before being printed in the Manual.

Co-operative Relations with Universities

Elmer T. Howson, Chairman*

As an introduction to its report this committee submitted a brief statement of its objectives, stating that, in continuing its work during the last year, it had gained a new appreciation of the importance of its task. The committee recognizes that the railways will face an era of greatly intensified competition when the present emergency has passed, and also that no industry is more efficient than its leadership. Rather than attracting the most promising of the young men available, as they have heretofore, the railroad, according to the committee, are today failing to meet the more aggressive competition of other industries for the more capable young men who are graduating from our colleges and universities. Stating further that many schools are not only abandoning instruction in transportation subjects, but are discouraging young men from preparing for service with the railways, the committee expressed the belief that this trend is of serious concern to railway managements, and it is, therefore, endeavoring to acquaint them with the facts.

It stated, however, that the situation is not without promising developments. Among these, it said, is the awakening of several of our most alert railways to the importance of initiating measures necessary to provide adequate personnel in the future, some of them having progressed sufficiently to secure initial results therefrom. Also, the committee said that the response of a number of colleges to its overtures has been most encouraging, especially significant being the renewal of interest in this subject on the part of the Society for the Promotion of Engineering Education.

Detailed progress reports, submitted as information, were presented by the committee on two of its five assignments. Regarding its assignment to call to the attention of universities and colleges such information and conclusions developed by the association as are thought to be of special interest or value to them, the committee said that it had sent copies of its last report to the presidents and deans of engineering colleges to acquaint them with the work that it has initiated in their field. Regarding this same assignment, the committee said that it has other activities in progress on which it is not yet prepared to report.

Value of a Technical Education

One of the assignments of this committee is to "develop means of bringing to the attention of railway managements the value of a technical education as a qualifying factor for young men desiring to enter railway service with a view to advancement." The first progress report on this subject, presented last year, was designed to indicate why railway managements should be interested in giving employment to desirable college men, and to give candidates for such employment a clear idea of what management expects of them. The committee said that its concluding observations in that report were extensively supported by comments and opinions of railway executives and engineers.

In this year's report, the committee endeavored to develop answers to four points: (a) Is there a recognized present demand for technical and college graduates on the railways? (b) Why should there be such a demand? (c) Is the demand evidenced by the aggressive action on the part of the railways? and (d) What is the college educator's view of the railway attitude?

To obtain the answer to the first of these questions, the committee addressed inquiries to several of the railway executives who had furnished some of the comments included in its first report, these executives being asked to express their views regarding the potential demand among the railways for college-trained men. Replies to this question were received, and quoted in the report, from Ralph Budd, president, Chicago, Burlington & Quincy; J. R. Downes, vice-president, Pennsylvania; H. M. Lull, executive vice-president, Southern Pacific Lines; and F. E. Williamson, president, New York Central System. From these comments, the committee concluded that there is a real and well-recognized present demand on the part of the railroads for desirable college men, although it said that information obtained from the colleges does not support the assumption that this demand is being generally filled by active recruiting of the better available graduates.

Regarding the question, "Why should there be a large present demand for technical and other college graduates on the railways?", the committee raised the further question as to whether the need for a reserve of trained college men from which to draw future supervisory officers is not greater today than it was ten or twelve years ago. To develop this phase of the subject, it obtained information from a few representative roads regarding the average ages of their officer personnel in the operating department. Data from roads comprising a total of 36,000 miles of lines showed that the average age of the operating officers increased from 51.3 years in 1929 to 55.1 years in 1941. Thus, the average officer on these railways is now nearly 4 years older than the average officer of 12 years ago. In the committee's opinion, this clearly illustrates the need of a greater reservoir of trained young men to meet future requirements.

Moreover, it was pointed out that there are probably one-fourth fewer officers at present than there were in 1929. The committee fears that, if future conditions should require increasing the official personnel, the difficulty to be expected in finding qualified men would be greatly increased. Hence, it concludes that there should be a definite demand on the railways for desirable college men fitted for training as supervisory officers.

To develop information regarding the question, "Is the demand for technical and other graduates evidenced by aggressive action on the part of the railways?", the committee addressed inquiries to 30 representative colleges requesting them to furnish information regarding the extent to which the railways, in comparison with other industries, have been contacting educational institutions for the purpose of selecting desirable college graduates for employment. On the basis of information obtained in this manner, the committee concluded: (1) That one out of every 58 contacts looking to the employment of technical graduates was from a railway; (2) that only one out of every 50 graduates placed through such contacts was employed by a railway; and (3) that there was an increase in the number of contacts made by railways in 1941, compared with 1940, which was proportionately greater than that shown by other industries. This evidence, said the committee, points to the fact that the railroads, with but few exceptions, are making little or no effort to employ and train desirable and qualified college men.

Answers to the question, "What is the college educator's view of the railway attitude?", were supplied in the form of unsolicited comments, furnished along with the data mentioned above, a number of which were quoted by the committee. The committee noted that these generally voiced a welcoming, friendly spirit toward the railways, but that some of them are quite critical.

The committee's findings on all these questions were summarized as follows:

(1) There is a real demand on the part of the railways for desirable college men of the type described in the committee's first report on page 168 of the Proceedings, Vol. 42, for 1941.

(2) This demand is to be expected because the railways must be in a position to meet future needs for employees qualified for advancement.

(3) The railways have not as yet reflected this demand to the same degree as other industries or to the extent to which they are justified, but they are now showing increasing interest.

(4) Colleges are prepared to co-operate with the railways in supplying the men qualified to meet this demand.

(5) The services of your committee appear to be very opportune at the present time in that they should serve to remove

* Vice-President and Western Editor, Railway Age.

any misapprehensions on the part of educators and students and should develop the needed co-operative relationship between the colleges and the railways.

Stimulating Interest in Transportation Among College Students

Regarding its assignment to stimulate a greater interest in the science of transportation among university and college students, the committee submitted a progress report, offered as information, in which it commented on the various means that are available to the railroads in accomplishing this end. First, the committee pointed out that it is of considerable importance to the universities and to the railroads that college students have a greater appreciation of, and interest in, the railroad industry. Pointing out that the principal means of developing college interest in railroad work lie in the disclosure of the facts pertaining thereto, the committee said that this may be accomplished in a number of ways, such as through summer employment, campus meetings, inspection trips and libraries.

Probably the most effective of these, it said, is summer employment. This work should be varied, with the student being permitted to spend successive summers in different departments. The committee expressed the opinion that the first summer should be spent on track maintenance, with subsequent summers being spent in the signal department, in a yardmaster's office, and in the accounting and auditing department. In this connection, it was pointed out that undergraduates have considerable difficulty in obtaining summer work, but that when they do obtain such work, they develop an unusual loyalty toward their employer. The committee is of the opinion that the employment of students during summer vacations should be conducted in accordance with a definite program.

Stating that student societies have always been popular in campus areas, the committee said that railroad officers should appreciate this fact, and should even take the initiative in offering their services to appropriate campus societies. Also, it said that the railroads can afford to give increased attention to the use of college inspection trips as a means of developing interest in railroading among students. Further, it called attention to the desirability of having complete sets of A. R. E. A. proceedings in engineering college libraries.

Following the presentation of the report, W. C. Swartout (M. P.) raised a question of the wages that are paid to college students during the first few years of railway service, and stating that by comparison, industries are paying much higher wages at the start and that they advance men more rapidly after they in the service. F. S. Schwinn (M. P.), a member of the committee, replied that the committee had not inquired formally into wages, but that information that had come to the committee indicated that some roads are paying less than some industries, while other roads are paying higher wages at the start than some industries, but, he emphasized, industry does not offer as great ultimate rewards as the railways do.

C. E. Smith (N. Y. N. H. & H.) said that on several occasions he has checked through volumes of Who's Who to find the background of railway presidents. He found on each occasion approximately one-third of the railway mileage of the United States and Canada under the presidency of graduates of engineering colleges; one-third under graduates of other colleges; while the remaining presidents had no college education. While he had no data on the percentage of college men in railway service as a whole, information that appeared to be reliable indicated that the ratio of college-trained presidents was many times the ratio of college men to all employees.

Mr. Howson then introduced a number of senior engineering students from several colleges, who had come to the convention primarily to be present during the presentation of the report. He also introduced members of the engineering faculties from several colleges who were also present to hear the report and its discussion.

The chairman then called on J. B. Akers (Southern) who explained the student apprentice system on his road, under which engineering graduates are trained in the maintenance of way department, and are advanced as rapidly as their abilities permit. This road endeavors to keep 15 men in training at all times, and new men are brought in to fill vacancies created by promotions or by other causes.

Water Service, Fire Protection and Sanitation

B. W. DeGeer, Chairman*

During the year this committee gave consideration to nine subjects, submitting progress reports, offered as information, on six assignments, a progress report on Revision of Manual containing recommended changes and additions, and one final report, which was offered for adoption and inclusion in the Manual.

Revision of Manual

A number of recommendations were made by the committee under Revision of Manual, including, first, several minor corrections and revisions applying to present Manual material. Next, it pointed out that the matter under Standard Methods of Water Analysis and Interpretation of Results, which was adopted 10 years ago, should now be rearranged and amplified to make it conform with the refinements now required for accurate boiler feed-water treatment. To this end the committee included the revised material in its report, which it presented for adoption and inclusion in the Manual. This material included a list, with descriptions, of the different reagents used; a section on rapid field tests giving the procedure for making tests on raw water, treated water and boiler samples; and a section on laboratory methods, giving the procedures involved in making various tests together with a description of methods that can be used in calculating hypothetical combinations in average waters.

A subcommittee that was appointed to compile revised specifications for cast iron pipe reported that, after studying various specifications for such pipe, it had reached the conclusion that the American Standards Association Specifications, A-21.2—1939, covering cast iron pit-cast pipe, should be adopted by the association by title reference. It went on to describe the manner in which these specifications differ from the present matter, as printed in Vol. 23 of the proceedings. The committee explained that any railroad desiring to use centrifugally cast pipe, or pipe with bolt lugs and integral machine-tapered joints, may use Federal Specification WW-P-421 dated July 21, 1931, together with WW-P-421, Amendment No. 3, dated April 26, 1940. It then recommended the deletion of the present reference in the Manual to specifications for cast iron pipe and the adoption in lieu thereof of the following sentence:

Cast iron pit-cast pipe shall conform to American Standards Association Specifications, A-21.2—1939, published by the American Water Works Association, 22 East 40th Street, New York.

All of the recommendations of the committee with reference to revision of the Manual were adopted without discussion.

Pitting and Corrosion of Boiler Tubes and Sheets

In a progress report, submitted as information, on the cause of and remedy for the pitting and corrosion of boiler tubes and sheets, the committee said that during the last year it had been investigating the results of experiments with the use of sodium nitrate as an inhibitor for inter-crystalline corrosion. It referred particularly to the experience of one road that had encountered considerable difficulty in securing the complete elimination of inter-crystalline corrosion by the use of sulphite liquor. This road found that the introduction of sodium nitrate appeared to give much better results, and that it also proved advantageous in other respects. The committee expects to make a final report on the use of this material at a later date.

It also reported that laboratory tests have shown there is no definite proof that inorganic salts, ordinarily found in boiler waters, exert any pronounced protective action; that these same tests have developed the fact that the presence of a higher sulfate content in a boiler water interferes with the protective action of lignin; that increasingly larger amounts of inorganic inhibitors are required in the feed water as the number of concentrations increase in the boiler; and that sodium nitrate has been

* Engineer Water Service, Great Northern.

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conclusions:

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Maintenance of V
Work Equipment*

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while three were final reports

Revision

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elimination of the four forms
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of all types of roadway equipm
were recommended in the defin
for push and trailer cars. All
were approved.

Standardization of

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interchangeability of parts for
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of the design for demountable
certain changes be made in the
the recommended standard axle
revised plan embodying these

* Assistant Engineer, Missouri Pa

found to be particularly effective as an inhibiting agent in the presence of organic lignin compounds.

Regulations Pertaining to Railway Sanitation

One of the assignments of the committee is to report on any action taken by federal or state authorities regarding regulations pertaining to railway sanitation, in connection with which it is collaborating with the Joint Committee on Railway Sanitation of the A. A. R. Reporting progress on this assignment, the committee said it had been advised that regulations pertaining to railway sanitation are being considered by a committee of the U. S. Public Health Service, which may have an appreciable effect on many of the present practices and installations at various railroad terminals. This subject has been referred to the Joint Committee on Railway Sanitation, and it is understood that this committee will confer with representatives of the Public Health Service before definite action is taken.

The committee also reported that it had a representative on a special committee composed of various federal organizations and scientific associations, which was appointed by the surgeon general of the Public Health Service to revise the Treasury drinking water standards. This proposed revision, it said, is also a matter of some concern to the railroads.

Fire Protection and Insurance Section, A. A. R.

The committee's report on the principal current activities of the Fire Protection and Insurance Section of the A. A. R., which was presented as information, consisted largely of a brief statement of railway fire losses for 1940 as taken from the September (1941) news letter of that section. Particular attention was called to the fact that railway losses due to fires in 1920, the year that serious efforts were initiated to prevent fires, amounted to $54.40 per mile, whereas in 1940 the loss was only $12.96 per mile. The figures given were confined to a classification of the 1940 fire losses on the basis of the types of structures in which they occurred, and of a listing of the different causes and their relative importance.

Use of Anti-Foam Compounds to Reduce Road Blowing

The committee's report on the use of anti-foam compounds to reduce road blowing, which was submitted as information, consisted of a discussion of the cause and prevention of foaming. It first pointed out that there has been considerable confusion in the use of the terms "foaming" and "priming" and then went on to define them and to differentiate between the two phenomena. Briefly, it was explained that foaming is the term applied to the action in a boiler when steam bubbles build up over the surface of the water to form a layer of foam which fills the steam space and is carried over into the cylinders, while priming is the term applied to the instantaneous evolution of steam from a heating surface, which suddenly carries water in large volumes into the steam space.

Pointing out that true foaming, as distinguished from priming, is due to the quantity and quality of the impurities in the water, the committee pointed out that it may be controlled either by keeping the dissolved solids below the critical point by blowing, or by the use of anti-foam compound. Information collected by the committee indicates that the systematic blowing off of boilers is by far the most widely used of the two methods. It then went on to discuss the use of anti-foam compounds containing castor oil, pointing out that such compounds will not prevent foaming but will postpone the time at which foaming occurs. Admitting that the control of foaming presents a complex problem, the committee said that systematic blowing is undoubtedly the most satisfactory method, but that under certain conditions the use of anti-foam compound will prove economical.

Welded Steel Tanks for Water Service

In a brief introductory paragraph to its report on specifications for welded steel tanks for water service, the committee stated that within the last eight years the welded steel tank has gradually come into use and is today one of the best and most economical types of water-storage tank available. Such tanks, it continued, are more economical than riveted tanks and offer the further advantage that they can be dismantled and re-erected at less cost. It then offered a set of specifications for welded steel tanks for water service which it recommended for adoption and inclusion in the Manual.

A. M. Knowles (Erie) questioned the advisability of separate A. R. E. A. specifications for steel water tanks, when the practice of other committees of the association, namely, Buildings and Iron and Steel Structures, have adopted American Welding Association specifications where applicable. It was his contention that in the interest of simplicity and uniformity, if not thoroughness, the association should, in preference to adopting the specifications presented, adopt the composite specifications of the American Welding Society for Elevated Steel Water Tanks, Standpipes and Reservoirs, both welded and riveted, adopted in 1941.

Calling attention to the three grades of steel allowable in the committee's specifications, with progressively increasing ultimate strengths and yield points, Mr. Knowles took exception to that part of the specification calling for a single design unit stress, regardless of which type of steel is used, of 15,000 lb. per sq. in., characterizing this as wasteful in the better grades of steel, which are the more commonly used. As a result of Mr. Knowles' comments, the committee's motion to adopt the specifications was defeated.

Cleaning Sewers and Underground Pipe Lines

The committee presented as information a comprehensive report on its assignment to investigate methods for cleaning sewers and underground pipe lines. The two types of lines were discussed separately and in each case the discussion was divided between mechanical and chemical methods. Under sewer lines, the mechanical methods described included the use of wood sewer rods, spiral cutters attached to water hose, coil spring cables with flexible steel bands, and ball floats. Brief reference was made to the use of proprietary chemical compounds for cleaning sewer lines.

In its discussion of the cleaning of other underground pipe lines the committee included a detailed description of the procedure and equipment employed in the mechanical method. Reference was made to several different types of equipment that are available for this purpose. In discussing the use of the chemical method the committee pointed out that inhibited hydrochloric acid is used for this purpose, and then went on to describe the procedure employed.

Size of Water Columns and Supply Lines

The committee's report on the practicable size of water columns and supply lines for maximum delivery of water to locomotive tenders, which was submitted as information, consisted of a thorough discussion of the entire present-day problem of water delivery to locomotives. After reviewing the developments of recent years, such as higher train speeds and lengthened locomotive runs, that have brought about the need for larger tenders and increased delivery rates of boiler water to locomotives, the committee then discussed the various factors that have a bearing on the rate at which water can be delivered.

To obtain representative data on the subject, the committee submitted a questionnaire to 32 railroads. From the replies received it concluded that the railroads have given scant attention to the selection of the type and design of water columns and the size of pipe lines. Accompanying the report were six water-column delivery charts which were submitted for use as a guide in selecting the column and supply line that will give the desired water delivery under a given set of flow-head conditions. Also, the report included a list of six methods by which water delivery can be increased, and a list of five recommendations regarding various aspects of the problem. The recommendations are as follows:

(1) Make a separate study of each location to obtain the desired results in the most economical manner.

(2) The size of the water column supply line should be governed by the available flow head and delivery desired.

(3) The maximum safe delivery from special water columns of improved types serving locomotive tenders of uniform height is considered to be 5,000 to 5,500 gal. per min., as higher rates of flow will increase the time of taking water because the flow will be tapered off for the last 2,000 or 3,000 gal. to prevent

overflowing locomotive tender, a
the anchoring devices which woul
(4) The maximum safe delive
umns serving variable height loc
anchoring devices is considered t
(5) Standardize on type of wat
of repair parts required for main
ments.

Economics of Railw

Reports were submitted by this
assignments, one of which was
other five were final reports.
Revision of Manual, although one
material that was recommended f
All other reports were submitted

Reduction of Labor in

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phase of its report this year was d
roadbed improvement program tha
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Explaining that such programs a
because of the low cost of moving
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program has already resulted in in
and substantial economies.

Labor Economies Through R

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some pole driving, but supplied no s
data that was used in the report.
The methods of stabilizing the r
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the forcing of cement into the road
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methods was described in detail, refe
cases to specific installations; figur
savings were also given.

Equating Track Values for L

The review and revision of factors
equating track values for labor distr
the assignments of this committee. I
ment, the committee first noted that p
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on Track, Economics of Railway Labo
way Operation. To obtain material fo
ing the table of mileage and track
commonly used, the committee submi

* Assistant Engineer Maintenance of Way

lubricated parts if it is to prevent wear on the surface of bearings.

(2) It must prevent excessive generation of heat which would otherwise be created by friction.

(3) It must carry away heat developed during operation in order that the bearing may be operated at the lowest possible temperature.

Finally, in the selection of a lubricant, the subject of economy should be given due consideration; that is, the cost of a lubricant for the purpose intended.

New Developments in Roadway Machines

A detailed report, presented as information, was submitted by the committee on its assignment to report new developments in roadway machines. This report first reviewed in a general way the development of power equipment to its present status, pointing out that it was the shortage of labor that prevailed during the first World War that provided the initial impetus. The earlier machines, said the committee, had many shortcomings which were overcome as experience was gained in the field and the shop. Today, the design of roadway machines has been largely stabilized, but nevertheless the committee noted that an astonishing amount of effort and activity directed toward the improvement of such equipment is discernible.

In making its study, the committee was impressed by the larger range of off-track designs that are available today as compared with five years ago, a development that it said was being stimulated by the higher train speeds of today as well as by the demands of train-service employees to participate in the operation of on-track units. Probably the next most striking development, in the opinion of the committee, is the extension of anti-friction bearings to all types of work equipment.

Discussing improvements that are being made today, the committee noted that in cases where machines have been underpowered, they are being equipped with larger engines or with power units having a greater number of cylinders. Also, it said, there is a marked trend toward engines with higher speeds and reduced fuel consumption. An increasing tendency toward the use of Diesel engines for powering the larger units of equipment was likewise noted. Still other improvements are being made with the objective of simplifying design, reducing equipment maintenance costs, reducing weight and promoting safety, dependability and efficiency.

Despite the progress that has been made to date in mechanizing work equipment, the committee said that there are still a number of unfilled needs, for which no power machines are yet available. Among the equipment needed, as listed by the committee, is a one-man inspection car weighing not more than 400 lb., and preferably not more than 375 lb.; an electrically-operated impact wrench; electrical tools operating on frequencies of 180 cycles or higher; a simple and practical warning signal for track and bridge gangs; a self-contained spike driver; a machine for cleaning crib ballast; and a high-speed portable rail saw.

Color of Roadway Machines

In reporting on its assignment to recommend a color for roadway machines, the committee referred to the recommendations on this subject that it had made in 1931, and said that observation indicates that these recommendations are not being followed generally. However, the committee expressed the opinion that this failure to use the color recommended is the result of conflicting opinions arising from the absence of specific terminology rather than dissatisfaction with the recommended color. For this reason the committee set out to revise the recommendations in such a manner as to establish as standard a definite color and shade and to make available information showing exactly how this standard shade may be obtained.

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Accordingly, the committee decided on the color, known as "federal yellow" that is used by the Public Roads Administration, and told how it can be obtained. It recommended that this color be adopted as standard for roadway machines and that this recommendation, along with a color plate illustrating the exact color, be submitted in 1943 under Revision of Manual. This recommendation was adopted.

Push Cars and Trailer Cars

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Power track drills find their greatest usefulness where regular programs of track work are in operation. With power bonding drills, signal bonds can be installed as fast as the rails are laid. Cut rails can be drilled for track bolts and joints made safe for traffic with a minimum of lost time. Around terminals or where time is at a premium due to heavy traffic, the power drill permits more work to be done because the final operation of drilling and bolting can be carried out with speed and certainty.

The entire report of the committee was received without discussion.

Roadway and Ballast

A. E. Botts, Chairman*

Reports were submitted by this committee on one or more parts of eight of its twelve assignments, most of which were progress or final reports presented as information, although several were final reports containing Manual material.

Physical Properties of Earth Materials

Last year the committee submitted as information a report on structural foundation soils. With minor revisions this report was presented again this year with the recommendation that it be adopted and published in the Manual. The report consisted of a general discussion of settlement and bearing capacity of structural foundation soils. Under settlement, the committee discussed the different types of soils and their performance under load, and also described a procedure for use in determining the amount of settlement to be expected in different soils. Other matters that were given consideration as influencing settlement included deformation due to lateral flow, the manner in which the load is applied, and the moisture content.

Under bearing capacity, the committee discussed the factors to be taken into consideration in determining the load capacities of different soils. First, the effects of area in different types of soils were given consideration, after which the value of field loading tests and laboratory tests was discussed. Next, the committee turned to the question of determining the bearing capacity of piles, giving consideration here to the relationship between dynamic resistance and static bearing capacity in different types of soils. In determining the bearing capacity of pile foundations, the committee said that consideration must be given to the effect either of consolidating the soil by pile-driving or of increasing the compressibility through remolding.

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A comprehensive report was presented by the committee on the prevention of erosion in natural waterways by the construction of check dams, which was offered as information with the

* Assistant Engineer Maintenance of Way, Chesapeake & Ohio.

found to be particularly effective as an inhibiting agent in the presence of organic lignin compounds.

Regulations Pertaining to Railway Sanitation

One of the assignments of the committee is to report on any action taken by federal or state authorities regarding regulations pertaining to railway sanitation, in connection with which it is collaborating with the Joint Committee on Railway Sanitation of the A. A. R. Reporting progress on this assignment, the committee said it had been advised that regulations pertaining to railway sanitation are being considered by a committee of the U. S. Public Health Service, which may have an appreciable effect on many of the present practices and installations at various railroad terminals. This subject has been referred to the Joint Committee on Railway Sanitation, and it is understood that this committee will confer with representatives of the Public Health Service before definite action is taken.

The committee also reported that it had a representative on a special committee composed of various federal organizations and scientific associations, which was appointed by the surgeon general of the Public Health Service to revise the Treasury drinking water standards. This proposed revision, it said, is also a matter of some concern to the railroads.

Fire Protection and Insurance Section, A. A. R.

The committee's report on the principal current activities of the Fire Protection and Insurance Section of the A. A. R., which was presented as information, consisted largely of a brief statement of railway fire losses for 1940 as taken from the September (1941) news letter of that section. Particular attention was called to the fact that railway losses due to fires in 1920, the year that serious efforts were initiated to prevent fires, amounted to $54.40 per mile, whereas in 1940 the loss was only $12.96 per mile. The figures given were confined to a classification of the 1940 fire losses on the basis of the types of structures in which they occurred, and of a listing of the different causes and their relative importance.

Use of Anti-Foam Compounds to Reduce Road Blowing

The committee's report on the use of anti-foam compounds to reduce road blowing, which was submitted as information, consisted of a discussion of the cause and prevention of foaming. It first pointed out that there has been considerable confusion in the use of the terms "foaming" and "priming" and then went on to define them and to differentiate between the two phenomena. Briefly, it was explained that foaming is the term applied to the action in a boiler when steam bubbles build up over the surface of the water to form a layer of foam which fills the steam space and is carried over into the cylinders, while priming is the term applied to the instantaneous evolution of steam from a heating surface, which suddenly carries water in large volumes into the steam space.

Pointing out that true foaming, as distinguished from priming, is due to the quantity and quality of the impurities in the water, the committee pointed out that it may be controlled either by keeping the dissolved solids below the critical point by blowing, or by the use of anti-foam compound. Information collected by the committee indicates that the systematic blowing off of boilers is by far the most widely used of the two methods. It then went on to discuss the use of anti-foam compounds containing castor oil, pointing out that such compounds will not prevent foaming but will postpone the time at which foaming occurs. Admitting that the control of foaming presents a complex problem, the committee said that systematic blowing is undoubtedly the most satisfactory method, but that under certain conditions the use of anti-foam compound will prove economical.

Welded Steel Tanks for Water Service

In a brief introductory paragraph to its report on specifications for welded steel tanks for water service, the committee stated that within the last eight years the welded steel tank has gradually come into use and is today one of the best and most economical types of water-storage tank available. Such tanks, it continued, are more economical than riveted tanks and offer the further advantage that they can be dismantled and re-erected at less cost. It then offered a set of specifications for welded steel tanks for water service which it recommended for adoption and inclusion in the Manual.

A. M. Knowles (Erie) questioned the advisability of separate A. R. E. A. specifications for steel water tanks, when the practice of other committees of the association, namely, Buildings and Iron and Steel Structures, have adopted American Welding Association specifications where applicable. It was his contention that in the interest of simplicity and uniformity, if not thoroughness, the association should, in preference to adopting the specifications presented, adopt the composite specifications of the American Welding Society for Elevated Steel Water Tanks, Standpipes and Reservoirs, both welded and riveted, adopted in 1941.

Calling attention to the three grades of steel allowable in the committee's specifications, with progressively increasing ultimate strengths and yield points, Mr. Knowles took exception to that part of the specification calling for a single design unit stress, regardless of which type of steel is used, of 15,000 lb. per sq. in., characterizing this as wasteful in the better grades of steel, which are the more commonly used. As a result of Mr. Knowles' comments, the committee's motion to adopt the specifications was defeated.

Cleaning Sewers and Underground Pipe Lines

The committee presented as information a comprehensive report on its assignment to investigate methods for cleaning sewers and underground pipe lines. The two types of lines were discussed separately and in each case the discussion was divided between mechanical and chemical methods. Under sewer lines, the mechanical methods described included the use of wood sewer rods, spiral cutters attached to water hose, coil spring cables with flexible steel bands, and ball floats. Brief reference was made to the use of proprietary chemical compounds for cleaning sewer lines.

In its discussion of the cleaning of other underground pipe lines the committee included a detailed description of the procedure and equipment employed in the mechanical method. Reference was made to several different types of equipment that are available for this purpose. In discussing the use of the chemical method the committee pointed out that inhibited hydrochloric acid is used for this purpose, and then went on to describe the procedure employed.

Size of Water Columns and Supply Lines

The committee's report on the practicable size of water columns and supply lines for maximum delivery of water to locomotive tenders, which was submitted as information, consisted of a thorough discussion of the entire present-day problem of water delivery to locomotives. After reviewing the developments of recent years, such as higher train speeds and lengthened locomotive runs, that have brought about the need for larger tenders and increased delivery rates of boiler water to locomotives, the committee then discussed the various factors that have a bearing on the rate at which water can be delivered.

To obtain representative data on the subject, the committee submitted a questionnaire to 32 railroads. From the replies received it concluded that the railroads have given scant attention to the selection of the type and design of water columns and the size of pipe lines. Accompanying the report were six water-column delivery charts which were submitted for use as a guide in selecting the column and supply line that will give the desired water delivery under a given set of flow-head conditions. Also, the report included a list of six methods by which water delivery can be increased, and a list of five recommendations regarding various aspects of the problem. The recommendations are as follows:

(1) Make a separate study of each location to obtain the desired results in the most economical manner.

(2) The size of the water column supply line should be governed by the available flow head and delivery desired.

(3) The maximum safe delivery from special water columns of improved types serving locomotive tenders of uniform height is considered to be 5,000 to 5,500 gal. per min., as higher rates of flow will increase the time of taking water because the flow will be tapered off for the last 2,000 or 3,000 gal. to prevent

overflowing locomotive tender, and time will be lost in handing the anchoring devices which would be necessary.

(4) The maximum safe delivery of improved type water columns serving variable height locomotive tenders without special anchoring devices is considered to be 3,500 to 4,500 gal. per min.

(5) Standardize on type of water column to minimize the stock of repair parts required for maintenance and emergency replacements.

Economics of Railway Labor

G. M. O'Rourke, Chairman*

Reports were submitted by this committee on six of its nine assignments, one of which was a progress report, while the other five were final reports. No report was submitted on Revision of Manual, although one of the final reports contained material that was recommended for publication in the Manual All other reports were submitted as information.

Reduction of Labor in Maintenance Work

One of this committee's assignments is to make analyses of operations on railways that have made marked progress in the reduction of labor required in maintenance of way work. This phase of its report this year was devoted to a description of the roadbed improvement program that is now in progress on certain lines of the Great Northern in Minnesota and North Dakota. As explained by the committee, this program involved the rehabilitation of the roadbed out-of-face, including the widening of cuts and fills and improvements to draining, in such a manner that it will have substantially the same characteristics as if built entirely new to the most up-to-date standards.

Explaining that such programs are economically feasible only because of the low cost of moving earth that is possible through the use of modern off-track equipment, the committee described the objectives and details of the program and the manner in which it is being carried out. The committee said that those who are in close touch with the work are convinced that this program has already resulted in improved operating conditions and substantial economies.

Labor Economies Through Roadbed Stabilization

To obtain information for its report on the labor economies to be derived by stabilizing the roadbed through means other than drainage, the committee sent a questionnaire to 48 railroads. The information requested included the various methods, other than drainage, that are used to stabilize roadbeds, the cost of such work and the savings in labor that are effected thereby. Replies were received from 32 railroads, representing about 125,000 miles of road, of which 11 reported that they had used no means other than drainage; 5 reported that they had done some pole driving, but supplied no statistics, while 16 furnished data that was used in the report.

The methods of stabilizing the roadbed that were reported as having been used by these roads include the driving of cull or old crossties or poles in cuts or low fills; the driving of poles, piling or scrap rail in the shoulders of embankments; the placing of concrete slabs or wood mats on top of the roadbed; the forcing of cement into the roadbed; and the construction of banquettes along the toes of embankment slopes. Each of these methods was described in detail, reference being made in some cases to specific installations; figures representing costs and savings were also given.

Equating Track Values for Labor Distribution

The review and revision of factors previously established for equating track values for labor distribution constitute one of the assignments of this committee. In reporting on this assignment, the committee first noted that previous reports on the subject had been presented at various times by the committees on Track, Economics of Railway Labor, and Economics of Railway Operation. To obtain material for use as a basis for revising the table of mileage and track property equivalents most commonly used, the committee submitted inquiries to a large number of roads. Also, information was obtained showing the extent to which use is made of the present equivalents.

The material that was received as a result of the inquiries was weighted, averaged and analyzed, as the result of which the following table of relative values was developed:

First main track, mile	1.00
Second main track, mile	0.83
Third and fourth main track, mile	0.75
Branch line track, mile	0.49
Passing and thoroughfare track, mile	0.43
Yard and side track, mile	0.32
Main track switch, each	0.07
Side track switch, each	0.05
Railroad crossing, each	0.10
Paved street or highway crossing, each	0.07
Unpaved highway crossing, each	0.03
Unimproved road crossing, each	0.01

Another table was presented showing the extent to which these values vary from those developed in 1921; these variations and the reasons therefore were discussed in some detail. In addition to the items given in the table of values, the committee pointed out that some railroads have established ratings covering other factors, and some of these were listed. The following conclusions were presented:

(1) The table of comparative track values is recommended for general guidance in allocating labor on territories where all conditions are approximately alike, and its use will aid in distributing maintenance allowances to greater advantage than would otherwise be the case.

(2) No table of track values can be sufficiently specific to meet all conditions of railways or portions of railways having varying traffic, physical, or other basic characteristics. Hence, the use of the table is subject to limitations when so applied.

The committee recommended that these conclusions and the revised table of relative track values be adopted for publication in the Manual. Its recommendations were adopted without discussion.

Use of Highway Motor Vehicles

One of this committee's assignments is to determine the labor economies that are possible through the use of highway motor vehicles for maintenance forces. As a result of its study of this subject, the committee found that the preponderance of use of highway vehicles by the railroads is in large busy terminals and congested main-line territory. It said that the savings in labor that it is possible to effect by the use of highway vehicles depends entirely on the extent to which the existing conditions lend themselves to the full and efficient use of these vehicles. It said further that the value of this equipment in emergencies was stressed in answers to questionnaires on the subject.

The committee listed 14 advantages and 2 disadvantages that are inherent in the use of motor vehicles in maintenance work and then submitted the following conclusion: "Substantial savings are possible in maintenance of way labor through the use of highway motor vehicles where conditions are conducive to and are favorable for their employment. In such locations, savings of $500 to $3,600 per unit per year have been reported to the committee." This report was submitted as information.

H. R. Clark (C. B. & Q.), noting the absence of any reference in the report to existing conditions under which additional highway motor vehicles are not available to the railways, suggested that some reference in this regard be incorporated to bring the report up to date. Answering Mr. Clarke, Chairman O'Rourke said that the committee had given consideration to such a reference, but that, in the hope that the present situation will be temporary, it had considered the inclusion of such a reference inadvisable.

Periodic Spot Welding of Rail Ends

A final report, offered as information, was submitted by the committee on its assignment to ascertain the labor economies resulting from periodic spot welding of rail ends as compared with less frequent out-of-face welding. Of 34 railroads from which information on this subject was obtained, 31 reported that they carry out their rail-end welding work in out-of-face programs, but that they also do some spot-welding work, which may amount to from 5 to 50 per cent of the work done. Only three of the roads reporting carry out their rail-end welding work entirely by the periodic spot-welding plan. Based on its

* Assistant Engineer Maintenance of Way, Illinois Central.

studies of the subject, the committee presented the following conclusions:

Labor to spot weld rail ends periodically costs more per joint welded than it does when the welding can be done in out-of-face programs. The economies in track maintenance effected by welding rails are the same if the work is done in either the periodic spot-welding manner or by the out-of-face plan, if the welding work is done when it is required.

Keeping Vegetation Out of Ballast

The committee's assignment to determine the labor economies to be derived by keeping vegetation out of ballast was covered in a final report, which was submitted as information. First the committee quoted the statement in the Manual to the effect that "in the track, the elimination of vegetation facilitates drainage, increases the life of ties, reduces the fouling of ballast and otherwise decreases the cost of track maintenance." This statement, it said, implies that labor can be saved by keeping vegetation out of the ballast, although it pointed out that the extent to which this is true will depend on the conditions existing on the particular railroad.

According to the committee, the three items of track labor that are affected most by vegetation in the ballast are (1) tie renewals; (2) ballast maintenance; and (3) the maintenance of track drainage. The effects of vegetation in the ballast on each of these items was discussed separately, after which the committee submitted the following conclusions:

(a) The committee has found no data to show the extent to which actual savings in labor result from keeping vegetation out of the ballast.

(b) To determine the extent of the labor savings that will result by reason of keeping vegetation out of the ballast requires careful study of the characteristics of the railroad involved and the amount and cost of the track labor employed.

Maintenance of Way Work Equipment

G. R. Westcott, Chairman*

Reports were presented by this committee on 7 of its 14 assignments. Four of these were progress reports, three of which contained recommendations regarding Manual material, while three were final reports, submitted as information.

Revision of Manual

Under Revision of Manual, the committee recommended the elimination of the four forms now in the Manual covering the inspection, cost of operation, repair and retirement of motor cars, and the insertion, in lieu thereof, of six forms now appearing in Volume 40 of the proceedings. Also, the committee recommended the insertion in the Manual of a series of forms from Volume 42 of the proceedings, which are for use in recording data essential to the economical operation and maintenance of all types of roadway equipment. In addition, certain changes were recommended in the definitions now shown in the Glossary for push and trailer cars. All the committee's recommendations were approved.

Standardization of Parts for Motor Cars

In reporting on the standardization of parts and accessories for railway maintenance motor cars, the committee pointed to the recent development of demountable wheels for motor cars and described their advantages. To the end that there may be interchangeability of parts for such wheels, it was thought by the committee that a design showing the dimensions necessary for interchangeability would be desirable. Accordingly, a plan for such a wheel was presented by the committee and recommended for adoption and publication in the Manual.

In this connection, the committee pointed out that the adoption of the design for demountable wheels would necessitate that certain changes be made in the plan now in the Manual showing the recommended standard axle for motor cars. Therefore, a revised plan embodying these changes was submitted with the recommendation that it be adopted for publication in the Manual in place of the present plan.

The committee pointed out that the plan now in the Manual showing a safety rail for motor cars was adopted at a time when many direct-connected cars were in use, and the rear rail was limited to the width of the seat deck so that men pushing the car to start it could mount from the rear. Since this practice is now generally forbidden, the committee came to the conclusion that a full-width rail would be an additional safeguard. Accordingly, a plan incorporating this feature was submitted by the committee and recommended for publication in the Manual in place of the present plan. This recommendation was approved.

Lubrication of Roadway Machines

The committee's assignment to report on the lubrication of roadway machines was covered in a comprehensive treatise on the subject, which was submitted as information. In an introduction to the report, the committee explained that if those interested in oils and greases would familiarize themselves with the fundamentals outlined, they would gain a clearer understanding of the subject and a knowledge of the essential properties to be considered when selecting a lubricant.

Explaining that lubricating oils are produced from petroleum by distillation or other methods, the committee devoted the first part of its report to an explanation of the nature and characteristics of the various types of oils, greases and crude petroleums. Here it called attention to the fact that two appendices were attached to the report, one of which included a brief glossary of lubricating terms, an approved test for lubricants and a description of straight and blended oils. The other appendix contained an explanation of common questions which arise in connection with lubricating work.

Turning to the question of standardization, the committee pointed out that for various reasons it is not possible to standardize on the use of a given lubricant for all railroads. To determine the extent and nature of the differences in the various lubricants used throughout the country for work equipment, questionnaires were sent to various roads. Replies to the questionnaire developed the fact that in many cases the same railroad used different brands or grades of lubricants for similar machines at various locations.

Discussing the selection of the proper lubricant, the committee listed 10 desirable properties which should be given consideration, and then went on to discuss each of them in more or less detail. Before a lubricating oil or grease is approved, the committee said that it is important that it be given both laboratory and service tests. Laboratory tests, it said, are usually made by the refiner to ascertain the lubricating properties of the lubricant, while the service test is made to determine, under actual operating conditions, the "non-technical comparative viewpoint." A simple method for conducting a service test was described in detail. Any conclusion that is reached with respect to an oil or grease should be based, said the committee, on a correlation of the data from the laboratory tests, chemical analysis and service tests.

Discussing specifications for oils and greases, the committee said that they should cover the chemical characteristics of the greases or oils and such physical properties as viscosity, flash, fire point, corrosive action, etc., and the penetration test and the number of the grease desired. Outlines were given for use as guides in preparing specifications for oils and greases. Two types of forms that are used in listing oils and greases for convenient reference in the field were illustrated in the report. The committee concluded its report as follows:

Your committee, in preparing this report, has endeavored to reduce to simple treatment, in relatively brief form, the many details involved in the lubrication of work equipment. Also, care has been taken to present the simple and fundamental facts with accompanying explanations.

There can be no standardization of grease and oils because the selection of a lubricant may be governed by basic differences in the crude oil reserves available in various locations, differences in refining processes and differences in climatic conditions. Therefore, lubricants should be selected on the basis of service and laboratory tests, giving due consideration to the chemical properties.

In the selection of a lubricant, it is necessary to give consideration to the following requirements:

(1) It must maintain an unbroken oil film between the moving

* Assistant Engineer, Missouri Pacific.

lubricated parts if it is to prevent wear on the surface of bearings.

(2) It must prevent excessive generation of heat which would otherwise be created by friction.

(3) It must carry away heat developed during operation in order that the bearing may be operated at the lowest possible temperature.

Finally, in the selection of a lubricant, the subject of economy should be given due consideration; that is, the cost of a lubricant for the purpose intended.

New Developments in Roadway Machines

A detailed report, presented as information, was submitted by the committee on its assignment to report new developments in roadway machines. This report first reviewed in a general way the development of power equipment to its present status, pointing out that it was the shortage of labor that prevailed during the first World War that provided the initial impetus. The earlier machines, said the committee, had many shortcomings which were overcome as experience was gained in the field and the shop. Today, the design of roadway machines has been largely stabilized, but nevertheless the committee noted that an astonishing amount of effort and activity directed toward the improvement of such equipment is discernible.

In making its study, the committee was impressed by the larger range of off-track designs that are available today as compared with five years ago, a development that it said was being stimulated by the higher train speeds of today as well as by the demands of train-service employees to participate in the operation of on-track units. Probably the next most striking development, in the opinion of the committee, is the extension of anti-friction bearings to all types of work equipment.

Discussing improvements that are being made today, the committee noted that in cases where machines have been underpowered, they are being equipped with larger engines or with power units having a greater number of cylinders. Also, it said, there is a marked trend toward engines with higher speeds and reduced fuel consumption. An increasing tendency toward the use of Diesel engines for powering the larger units of equipment was likewise noted. Still other improvements are being made with the objective of simplifying design, reducing equipment maintenance costs, reducing weight and promoting safety, dependability and efficiency.

Despite the progress that has been made to date in mechanizing work equipment, the committee said that there are still a number of unfilled needs, for which no power machines are yet available. Among the equipment needed, as listed by the committee, is a one-man inspection car weighing not more than 400 lb., and preferably not more than 375 lb.; an electrically-operated impact wrench; electrical tools operating on frequencies of 180 cycles or higher; a simple and practical warning signal for track and bridge gangs; a self-contained spike driver; a machine for cleaning crib ballast; and a high-speed portable rail saw.

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Reviewing its studies in this regard, the committee referred to the results of a comparative test conducted by the Material division of the Air Corps, United States War department, and pointed out that the Public Roads Administration has standardized on yellow for the painting of highway signs. Expressing the opinion that yellow should remain the chosen color for roadway machines, the committee said that, due to the many shades in which this color appears and the existing confusion relative to the nomenclature used to describe these shades, it would not be sufficient simply to designate the selected color as yellow.

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The entire report of the committee was received without discussion.

Roadway and Ballast

A. E. Botts, Chairman*

Reports were submitted by this committee on one or more parts of eight of its twelve assignments, most of which were progress or final reports presented as information, although several were final reports containing Manual material.

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This recommendation was approved.

A comprehensive report was presented by the committee on the prevention of erosion in natural waterways by the construction of check dams, which was offered as information with the

* Assistant Engineer Maintenance of Way, Chesapeake & Ohio.

expectation that it would later be submitted for adoption and publication in the Manual. Matters given consideration in the report included the conditions under which the use of check dams is practicable, the manner in which they reduce erosion, factors influencing the choice of a correct channel gradient and the shape and size of the channel. A formula was given for determining the channel gradient that will produce the desired velocity, and also sample calculations.

Also, the location of check dams was discussed, and factors influencing the length of the treated section were given consideration. In addition, the design and construction of channels, levees and check dams were discussed at length and the question of cost was given attention. The following conclusion was presented: "Where annual maintenance costs justify the expenditure and where the conditions fall within the limits described in the foregoing, this method of stream control is recommended."

Culverts

Reports were presented by the committee on four sub-topics of its general assignment on culverts. One of these dealt with the assignment to develop specifications for non-inflammable substances for pipe-line crossings. In this connection the committee called attention to the fact that last year it presented as information a set of specifications for pipe line crossings for non-inflammable substances under pressure. This year these specifications were offered for adoption and publication in the Manual.

Another of the assignments under culverts calls for the development of specifications for perforated pipe for subdrainage. A set of such specifications was submitted as information with the understanding that it would be presented for adoption next year.

Still another sub-topic under culverts is the development of specifications for multiple or sectional plate pipe and arches. A set of specifications covering this assignment was presented as information for the purpose of soliciting comments and criticisms before recommending them for approval. Pointing out that this material is used almost exclusively by the railroads and the builders of highways, the committee said that it had elected to adopt the specifications of the American Association of State Highway Officials as of January 1, 1941, insofar as they were found to be applicable to railroad practice and requirements.

A further sub-topic under culverts calls for the preparation of specifications for vitrified clay pipe culverts. Last year the committee presented specifications for vitrified clay culvert pipe, known to the industry as extra strong or triple-strength pipe, with the expectation that they would be recommended for adoption. However, certain additional data received just prior to the convention pointed to the advisability of withholding such action to afford time for a further study of the specifications. Embodying the benefit of this further study, the specifications were presented this year with the recommendation that they be adopted and published in the Manual.

All of these recommendations were approved.

Effect of Locomotive Blow-Offs

Under the general subject of roadway drainage, this committee has two assignments, on one of which—effect of locomotive blow-offs on track maintenance—a report was presented this year, being offered as information. First, the committee reviewed the development of blow-off cocks, and also of various devices for dissipating the force of the steam and water before it reaches the track. Next, discussing blow-off practices in terminals, the committee described the various types of blow-off boxes and tanks that are in use in yards to minimize damage to the track by repeated blow-offs. The following conclusions were presented:

(1) The blowing of locomotive boilers, either automatically or manually, while in motion on the line of road has no appreciable effect on track maintenance, provided engines are equipped with an efficient muffler or dissipating apparatus which prevents the concentration of the discharge directly at the track structure.

(2) The regular blowing of locomotive boilers at specified points in yards and terminals will increase the cost of track maintenance unless provision is made for promptly removing the water and solid matter from the track and roadbed.

(3) Where switch engines equipped with automatic continuous blow-off devices are operated frequently over the same tracks, it is necessary to incur extraordinary labor expense in removing the discharged sediment from the track, as it soon builds up against the rail and interferes with operation. On switching leads, such conditions can be particularly expensive, especially in cold weather when the discharged water and sludge may freeze and cause considerable difficulty in properly maintaining switches.

R. C. Bardwell (C. & O.) discussed the reasons for blowing down locomotives on the road and predicted that this practice will grow because it reduces the necessity for washing boilers at short intervals, thus giving a higher rate of utilization of these expensive power plants. He suggested that this is a subject that cannot be handled entirely by one department of a railway or by one committee of the association. He recommended, therefore, that the subject be continued (the committee had recommended that it be discontinued) for further study.

H. E. Tyrell (Southern), who presented the report, replied that the committee was not interested in the reasons for blowing off locomotives or in the means by which this was accomplished, but only in its effect on roadway maintenance. Mr. Bardwell insisted that the committee should be interested in both the means by which the blowing-off is done and where it is done. He said that some roads are blowing off as lightly on the road as consistent with good locomotive operation and were blowing the boilers down heavily at terminals where paved areas and drainage can be provided, and that as there are indications that this practice will be adopted more generally in the near future, the committee should continue its studies.

Retaining Structures

One of the committee's assignments under roadway protection is to develop information on retaining structures, giving consideration to (1) cribbing—timber, concrete and metal; and (2) walls—dry rubble, and masonry. This year a comprehensive report was submitted on this assignment. After a brief preliminary discussion of the conditions under which retaining structures are necessary, the committee undertook a discussion of cribbing, pointing out its advantages and the precautions that should be observed in the use of crib walls. Also, suggested ratios of base width to height for different conditions of surcharge were given, and various principles of construction were discussed. Timber, concrete and metal crib walls were then given separate treatment, and drawings were presented showing details of each type.

Under that part of this assignment relating to walls, the committee submitted a brief discussion of each type of wall—dry rubble, masonry and concrete—discussing the characteristics and principles of design in each case.

Tunnel Maintenance

A final report, offered as information, was submitted by the committee on its assignment relative to tunnel maintenance. Some of the conditions that have an influence on tunnel maintenance were first given consideration, after which the maintenance in tunnels of the ballast, ties, rail and fastenings was discussed briefly under separate headings. Attention was then given to the considerations involved in repairing and maintaining the different types of tunnel linings. Other matters considered included clearances, drainage, inspection, the use of watchmen and the protection of tunnels during extremely cold weather.

Fences

Reports were presented by the committee on two phases of its assignment on fences, namely, (a) corrosion-resisting fence wire, and (b) wood fence posts. Under (a) the committee pointed out that it is collaborating in the exposure tests of farm field fence, unfabricated wire, wire strand, barbed wire and chain link fencing that are being conducted by the Committee on Corrosion of Iron and Steel of the A. S. T. M. After listing the proceedings of the A. S. T. M. in which the progress of these tests are reported, the committee said that an inspection made since the last published report shows further rusting of the lighter-weight zinc-coated wires at Pittsburgh, Pa., Sandy Hook, N. J., and Bridgeport, Conn., although no rusting has taken place in the groups carrying coatings heavier than 1.0 oz. per sq. ft. at Pittsburgh or 0.45 oz. per sq. ft. at Sandy Hook. At State College, Pa., and at the remaining seven sites, no rust has appeared on any coated wires. Brief reference was also made to other aspects of the tests.

Regarding that phase of the assignment on fences pertaining

to wood fence posts, the committee pointed out that last year it had presented as information a set of specifications for wood fence posts. Incorporating certain revisions that had been made to comply with suggestions received, these specifications were presented again this year with the recommendation that they be adopted and printed in the Manual.

This recommendation was approved.

Use of Asphalt in Ballast

A brief report was presented again this year on the 600-ft. test track on the New York Central at Bryan, Ohio, embodying stone ballast coated with emulsified asphalt. The report consisted largely of a description of maintenance work that had been performed on the test track in 1941. Also, the committee reported that the test track "has remained in very good condition since installed. The line and surface are good, the water sheds off quickly after storms, and there is no foul ballast." Also, it said that no heaving of the test track had occurred, although this had been encountered on adjacent track.

The report was received without further comment.

Wood Preservation

H. R. Duncan, Chairman*

This committee presented progress reports on six of its twelve assignments, including three progress reports presented as information, one progress report containing recommendations regarding Manual material, one final report presented as information, and one final report recommended for adoption.

Revision of Manual

Several recommendations were made by the committee under Revision of Manual. Because the material on wood preservation now in the Manual under the heading, "General Provisions," contains statements that duplicate others which are more appropriate elsewhere, or that are in conflict with statements in prospect or which have been outmoded by developments occurring since 1926, the committee recommended that it be replaced with new material which was offered under the heading, "Wood Preserving Fundamentals." Also, because the present specifications for treating processes are not in accord with accepted procedure as practiced now, the committee offered new specifications which it recommended for adoption to replace those now appearing in the Manual.

Stating that the single creosote-coal tar solution as specified in the Manual has not proved adequate for the varied requirements of those practicing preservative treatment, the committee presented new specifications for creosote-coal tar solutions that provide a choice of several solutions, recommending that they be adopted in place of the existing material. Moreover, for various reasons the committee recommended deletion of the matter under the heading, "Preparing and Handling of Wood Before and After Treatment," and its replacement with new material headed, "Wood Preserving Plant Practice." Finally, it recommended deletion of the material appearing under the headings "Practicability of Boring Bridge and Switch Ties for Spikes Before Treatment," and "Service Test Records of Structural Timber, Including Piling."

All of these recommendations were approved.

Service Test Records of Treated Ties

In line with its past practice, the committee submitted the usual table showing the number of crosstie renewals per mile of maintained track for various roads, which had been revised to include figures for 1940. Reports were also included on special test tracks maintained by a number of roads, including the Chicago, Burlington & Quincy, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago & North Western and the Northern Pacific. Also included were inspection reports for 1941, as submitted by the U. S. Forest Products Laboratory, covering the Hartford, Fair Grounds and University Avenue test tracks of the C. M. St. P. & P. Appended to the report on test records was a statement of conclusions.

The committee's report on destruction by marine organisms and possible ways of prevention was made up of individual reports on marine piling tests that are being conducted by various agencies throughout the world. Reports were presented on the tests that are being conducted in the Panama Canal Zone, San Francisco Bay, New York Harbor and Australia, and in connection with the New England Piling Investigation. Also, there was a progress report giving the results obtained at various testing stations involving different species of wood and forms of protection.

Use of Creosote-Petroleum and Zinc Chloride and Petroleum

In a final report on its assignment to determine the effect of preservative treatment by the use of (a) creosote and petroleum, and (b) zinc chloride and petroleum, the committee summarized the work that it had done on this subject since it was first assigned. In addition, it reported that it had brought up to date the performance records of the approximately one million ties in the test tracks of the Northern Pacific, the Reading and the Atchison, Topeka & Santa Fe. A statement was submitted showing the average life in track to date of these ties and the expected average life, as determined by the Forest Products Laboratory curve, for all groups in which the number of ties renewed lies between 10 and 90 per cent.

Destruction by Termites and Ways of Prevention

In a brief report on its assignment to investigate destruction by termites and possible ways of prevention, the committee again pointed out the necessity of careful observations of points of possible entrance in structures for termites, such as where untreated timber is in contact with the ground, and stressed the desirability of using creosoted lumber where possible. No cases of destruction by termites in wood treated with creosote by the full-cell process have come to the attention of the committee.

It reported that the termite exposure test pieces at Florissant, Mo., have not been disturbed. Apparently the past summer was so dry that the termites retreated to deeper positions in the ground in order to find sufficient moisture. Included in the report were notes that had been obtained in connection with reports received from the Almirante testing station in Panama.

Treatment of Pacific Coast Fir

Specifications for the treatment of Pacific Coast Douglas fir were presented which were recommended for inclusion in the Manual in place of the present specifications for the treatment of air-seasoned Douglas fir.

The report was received without further comment.

* Superintendent of Timber Preservation, Chicago, Burlington & Quincy.

Report on Track

W. G. Arn, Chairman*

Progress reports were submitted by this committee on 10 of its 13 assignments, of which four contained recommendations regarding Manual material, while the other six were offered as information.

Revision of Manual

A number of recommendations were made by the committee under Revision of Manual. These were largely for the purpose of bringing the specifications for tie plates up to date. In this connection, the committee called attention to the fact that it proposed to eliminate the soft grade of tie plates from the specifications which, in their existing form, cover two grades of steel; and hence, that, if the recommendations were approved, these specifications would cover the medium-carbon steel plates only. Other recommendations were made for the purpose of harmonizing the permissible tolerances in the specifications for medium-carbon and high-carbon steel tie plates.

Also, the committee recommended that the specifications for wrought iron tie plates be deleted from the Manual, explaining that the very limited use that is being made of these specifications at this time does not warrant their retention. Moreover, it offered a new definition for main track, recommending that it be inserted in the Manual in place of the present definition. The reason for this latter recommendation, as explained by the committee, was the desirability of having the same definition in the Manual as in the Standard Code of the A. A. R.

* Assistant Engineer, Illinois Central.

All the committee's recommendations under Revision of Manual were adopted.

Plans and Specifications for Track Tools

Several proposals were made by the committee relative to its assignment dealing with plans and specifications for track tools and recommended minimum limits for reclaimed tools. Owing to certain changes in practices and the reduction of grades in hickory handles for tools by the Division of Simplified Practice, Bureau of Standards, the committee considered it advisable to revise the present specifications in the Manual for hickory handles. Accordingly, it submitted a new set of specifications for hickory handles for track tools, which it recommended for adoption and inclusion in the Manual in place of the existing specifications. This recommendation was approved.

Another proposal related to minimum reclaim limits for track tools. In this connection the committee called attention to the fact that the proceedings for 1941 contain a report on Limits of Wear for Track Tools, which was submitted last year as a progress report. For the purpose of technically fulfilling the assignment covered by that report, the committee pointed out that the minimum reclaim limits for each tool are outlined on the plans contained in it. The committee went on to say that it also seemed advisable to recommend certain limitations and requirements in making the reclamation, but that the subject of its assignment omitted any mention of specifications covering reclamation or repairs. It then submitted a list of track-tool plans, and recommended that the plans of the tools listed be revised to show the reclaim limits that were indicated on them in the proceedings for 1941. This recommendation was adopted.

Plans for Switches, Frogs and Crossings

During the year the committee proceeded with the work of reviewing all the trackwork plans and specifications which have been approved by the association as recommended practice. In its report on this subject it submitted a list of revised plans and supporting data with the recommendation that they be adopted as recommended practice and published in the Manual. Some of the plans and data listed, including a set of specifications for special trackwork, were published along with the report in Bulletin 427, February, 1942, while the remainder were published in Bulletin 427, November, 1941. Also included in the report was a list of plans and supporting data to be superseded by the new material, which it was recommended be withdrawn from the Manual. With these recommendations, the committee said that its work of reviewing the trackwork plans was completed. The recommendations were approved.

Following the presentation of the report on switches, frogs and crossings, Chairman Arn explained that, in compliance with the request of the War Production Board that the number of designs and standards be reduced to a minimum, a special sub-committee had been appointed to review all trackwork plans in the Manual to determine which, if any, could be withdrawn for the "duration." E. W. Caruthers (Penna.), chairman of this sub-committee, presented a list of eight plans for solid and rail-bound frogs, explaining that they represent duplications. In the interests of conservation, the special sub-committee recommended that the railroads make use of their standard trackwork plans and that, in the absence of such plans, use be made of those of the A. R. E. A. This sub-committee report was presented as information.

Photo-Elastic Study of Stresses in Tie Plates

Regarding its assignment to make photo-elastic studies of stresses in tie plates, the committee presented a progress report giving the results of photo-elastic studies and field stress measurements that were made on the Denver & Rio Grande Western. Based on these studies, the committee pointed out that the amount and distribution of stress in a tie plate is materially influenced by the following factors: (1) Fit between rail base and plate; (2) fit between plate and tie; (3) design of rail base; (4) design of tie plate; (5) elastic modulus and uniformity of tie; and (6) direction and amount of applied load.

After a brief discussion of the influence of these various factors, the committee gave consideration to the relative merits of the photo-elastic and field methods of study, in which it concluded that a combination of the two technics will give the maximum amount of information. Included in the report were a series of graphs depicting the results of both types of tests. The field measurements were made by fastening five strain gages to the under side of a D. & R. G. W. double-shoulder tie plate, and for some of the tests metal shims were inserted between the plate and the rail base to control the bearing. For making the photo-elastic studies, a cross-sectional model of a tie plate was made to ½ scale, using a material having about 1/60 the elastic modulus of steel. The manner in which both types of tests were made was described in detail in the report. According to the committee, the results of the tests have indicated that the tie plate used on the D. & R. G. W., which weighs about 15 lb., is heavier than need be.

Design of Tie Plates for RE Rail Sections

In a brief statement of progress on its assignment relative to the design of tie plates for RE rail sections, the committee said that, in response to demands for larger tie plates with inclined ends, a canvass of the principal railroads was made in May, 1941. This canvass indicated, said the committee, that 14 railroads favor the preparation of plans for tie plates larger than those given in the Manual, and that a 12-in. section for use with 112-lb. RE rail, and a 14-in. section for use with 131-lb. RE rail, would most nearly meet the requirements of the railroads concerned. Plans for tie plates of these dimensions were submitted as information.

Referring to the fact that these plans indicate the use of camber as an alternative practice, J. M. Farrin (I. C.) questioned whether camber is necessary, explaining that experience on his road had been such as to raise this question. J. deN. Macomb (Inland Steel Company), chairman of the sub-committee reporting on this subject, explained that the majority of the present plans for tie plates show camber as an alternative, and that the purpose of the sub-committee was to follow this practice in the new plans. Pointing out that eccentricity in tie plates is usually determined by rule-of-thumb methods, Mr. Farrin expressed the opinion that sufficient information should be available to make it possible to determine the amount of eccentricity for different sizes of tie plates. From the theoretical standpoint, eccentricity is necessary, he said, but practically its necessity is not certain.

C. J. Geyer (C. & O.), calling attention to the fact that the steel companies must be prepared to roll about 100 different sections of tie plates, suggested that, to avoid increasing the number of designs, railroads desiring larger tie plates should determine if the designs now shown in the Manual will serve their purpose. In reply, Mr. Macomb called attention to the fact that the plans presented by his sub-committee provide for plates with inclined ends, whereas those now in the Manual are for straight-end tie plates.

Reflex Units for Switch Lamps and Targets

A final report, submitted as information, was presented by the committee on its assignment to determine the practicability of using reflex units for switch lamps and targets. First, the committee traced briefly the growth in the use of reflex units for this purpose. Then it stated that during the last year a questionnaire on the subject was mailed to 78 roads. Of the 46 roads answering the questionnaire, one stated that it will not use reflex units, two stated that tests were unsatisfactory, one reported that its installation was so recent that no report could be made, 17 reported that they had no installations, and 25 reported the use of the units on a considerable scale.

The remainder of the report was devoted largely to a discussion and classification of the replies to the questionnaire. It included a listing of the objections to the use of reflex units and a tabulation of the types of locations at which their use is considered practical. The following conclusions were presented:

The number of reflex units in service indicates that they are safe and satisfactory.

The estimated annual average saving of over $157,000 made by 10,750 units already in service indicates the potential savings.

Welding of Manganese Castings in Special Trackwork

In a brief progress report, submitted as information, on its assignment to investigate the welding of manganese castings in special trackwork, the committee first reviewed briefly two pre-

vious reports that it had presented on this subject. In 1940, it said, it was decided to undertake a research program to improve the technique of manganese welding and to determine the relative merits of available welding rods. The scope of the program and a description of an installation of test frogs on the Chicago, Milwaukee, St. Paul & Pacific were published in the proceedings for 1940.

According to the committee, the 24 test frogs that are under observation on the Milwaukee have been in service since November, 1939. Periodic batter tests and surface hardness values are being taken. Supplementary to the field tests, laboratory work is being performed both on test bars and on sections of worn welded turnout frogs that have carried very heavy traffic. Welding of these test frogs will be started as soon as the wear progresses to the point at which maintenance welds would normally be made. The committee estimates that some welds can be started in the spring, others later, depending on the rate of wear.

Bolt Tension Necessary for Proper Support of Joints

In connection with its assignment to determine the bolt tension necessary for the proper support of rail joints, the committee submitted a progress report of the test installations that it has under observation on the Chicago, Milwaukee, St. Paul & Pacific, the Chicago, Burlington & Quincy, the Denver & Rio Grande Western, the Pennsylvania, and the Erie. Each of the test installations was treated separately, the discussion including in each case a brief description of the installation. Also, data were given for each installation showing the loss of bolt tension under traffic and the change in the out-to-out measurements of the joint bars.

In its discussion of the test results on the Burlington, the committee described the results of a laboratory test that was made for the purpose of obtaining information that would be helpful in explaining the results found in the track tests. In the laboratory test, which was made in the Burlington's laboratory at Aurora, Ill., two stirrups were prepared, one of which was placed in the upper, and the other in the lower, set of jaws of a testing machine. A regular track bolt, or bolt and spring washer, was then placed to join the stirrups. The load was then applied to the bolt in accordance with a predetermined schedule during which measurements were taken of the changes in the distance between the bolt-bearing surfaces of the stirrup.

Regarding its assignment on the prevention of damage due to brine drippings on tracks and structures, the committee reported that it had conducted a series of track tests to check the results obtained in the laboratory with sodium dichromate inhibitor added to brine solution. The tests were conducted on the Chicago, Milwaukee, St. Paul & Pacific and the Denver & Rio Grande Western. On the Milwaukee test a new rail was laid for the purpose and six new tie plates were installed on successive ties near each end of the rail and three near the center. Test discs were fastened to the toe of each tie plate. A saturated salt solution was applied to each of six plates and an alkaline solution, with sodium dichromate, was applied to the six plates at the other end of the rail. In addition, three tie plates were laid away nearby to determine the rate of corrosion due to atmospheric conditions only.

The test that was made on the D. & R. G. W. was essentially similar to that described above. On this road, six of the plates were sprayed each morning and afternoon with a saturated salt solution and six were sprayed with a salt solution containing the inhibitor. The results of both tests were tabulated in the report. The following conclusions, offered as information, were presented by the committee:

The results of these track tests are in good agreement with the laboratory tests. It appears that the tests have proved beyond reasonable doubt the efficacy of the inhibitor in reducing brine corrosion. There are still problems in the practical application of the inhibitor, however, to be surmounted. The principal problem involves the determination of means to apply the inhibitor, which is toxic if taken internally, in such manner that there may be no possible contamination of refrigerator car contents or other attendant hazard.

Specifications for High-Carbon Steel Track Spikes

Reporting on its assignment to develop specifications for high-carbon steel track spikes, the committee presented a set of such specifications which were offered for adoption. The specifications, which were relatively brief, were comprised of four main sections, namely, (1) Manufacture, (2) Chemical and Physical Properties, (3) Workmanship and Finish, and (4) Marking and Inspection. These specifications were accepted.

Report of Committee on Ties

John Foley, Chairman*

This committee submitted progress reports, offered as information, on three of its six assignments, and a final report, offered for adoption, on another subject.

Extent of Adherence to Specifications

Regarding its assignment to report on the extent of adherence to tie specifications, the subcommittee handling this assignment reported that during the year it had visited the yards of five wood-preserving plants, where ties of five railroads were undergoing seasoning. All the ties examined, totalling 2,165,000, were produced adjacent to the lines of the railroads owning them, the source being the uplands of the Allegheny area of five states in the Central, Eastern and Pocahontas regions, and few of them were other than oak. The committee stated that the ties showed a practically uniform standard of inspection, demonstrating, it said, that railroads do not have to depart from standards in order to procure ties. Pointing out that two of the yards had been inspected previously (in 1929), the committee said that the ties seen during the recent trip were markedly superior to those found on the earlier visit, at which time acceptance was not governed by A. R. E. A. specifications.

In only two yards were hewed ties present in appreciable numbers—25 per cent in one and 50 per cent in the other. The committee found that poor manufacture characterized the hewed ties, which were generally rough (with uneven surfaces), often inadequately peeled, and frequently excessively thick. This is evidence, it said, of the scarcity of adept workmen in the producing territory. The committee expressed the opinion that slipshod manufacture will continue as long as railroads tolerate the acceptance of mismade ties.

Tie Renewal Averages and Costs

Following its usual practice the committee presented tabulations of tie renewals and costs for 1940 and the last five years. These tables were given advance publication in Bulletin 425, June-July, 1941. They are based on data reported to the Interstate Commerce Commission by railroads in the United States and to the association by Canadian roads.

Pointing out that totals for each region and for the United States as a whole have been included for the first time, the committee said that these might be of interest to students of the subject when making comparisons. However, it again called attention to the need for considering differences in the practices of different roads that influence costs.

Dimensions of Ties

The committee reported that it had completed its assignment to investigate and report on the dimensions of ties, except that it had not yet carried out its intention, announced last year, of modifying the Manual to provide for longer crossties. Based on the studies and data reported previously, the committee recommended that one of the paragraphs under the heading, Dimensions of Ties, be changed to indicate that "for heavy-traffic lines ties meeting the standard specifications for Size 3, seven inches thick, and Sizes 4 and 5 should be used." It also recommended the addition of a new paragraph under this heading, to read as follows:

(5) Where ties shorter than 9 ft. are in use, the following is recommended: (a) the adoption of 9-ft. ties and the discontinuance of the purchase of 8-ft. ties as rapidly as practicable and economical. (b) The use of 9-ft. ties at least for lines of heavy traffic. (c) The adoption of the 9-ft. length whenever a change is made from the 8-ft. length.

These recommendations were approved.

Cause and Control of Splitting in Railroad Ties

In its report on the cause and control of splitting in railroad ties the committee said that during the last year a questionnaire had been submitted to all its members to determine what their

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respective railroads were doing to minimize the splitting of ties. Twenty-two railroads are represented on the committee. Also, the committee said that it had visited 14 seasoning yards where the antisplitting procedures of 18 roads had been observed, 9 of which were represented on the committee. The answers to the questionnaire and the observations of the committee were summarized in the report. Based on its study of the subject, the committee presented the following findings:

(1) Ironing is more effective when it prevents splits, than when used in an effort to stabilize a split already started.

(2) Best results will be obtained by application promptly after stacking, thus minimizing any loss that may occur from uncontrolled splitting.

(3) In any selective system of ironing there is no way to predetermine which ties will split; therefore, if ironing is delayed until splitting is evident the split is liable to be beyond control when discovered.

(4) The trend is toward two irons in each end of all ties as the proportion of rectangular sawed ties increases, since one iron cannot be placed so as to prevent deep splits progressing from more than one surface.

Proper ironing requires knowledge and skill based on training and experience. Many of the men performing this work lack the essential expertness, consequently the results are often unsatisfactory.

The report was received without discussion.

Report of Committee on Rail

W. H. Penfield, Chairman*

Progress reports were submitted by this committee on all ten of its assignments. All the reports were presented as information except that under Revision of Manual, which contained a number of recommendations regarding Manual material. Appended to this report was the Eighth Progress Reports of the Joint Investigation of Fissures in Railroad Rails, which is being conducted under the joint auspices of the A. R. E. A., through the Committee on Rail, and the manufacturers, through the Manufacturers' Technical committee. This latter report was submitted by the committee under its assignments to engage in further research of rail manufacture and to develop specifications for the thermal treatment of rail.

Revision of Manual

The committee recommended a number of revisions in the specifications for open-hearth steel rails. One of these dealt with Section 302 (c) of these specifications, which provides for entering on the test record for information only a Brinnel indentation on the head of the three test specimens. Expressing the thought that the information thus provided is not of sufficient value to require that it be furnished, the committee recommended that this provision be eliminated from the specifications. Also, pointing out that Section 406 (c) of these specifications provides for cutting a rail back to sound metal, the committee said that a proposed revision of this section would have the effect of providing for either cutting or breaking the rail back to sound metal, as well as stipulate the proper classification. One other minor change was recommended in the specifications.

Other recommendations made by the committee covering certain revisions and an addition to the definitions of rail defects in the glossary, the purpose being to clarify the definitions as an aid toward more accurate reporting and classifying. The recommended revisions applied to the definitions for transverse fissures, horizontal split heads, compound fissures, and detail fractures. The recommended addition consisted of a definition for engine-burn fractures. Revisions were also recommended in the Instructions for Filling in Rail Failure Form 402-C and the Instructions for Filling in Transverse Fissure Form 402-E.

All of these recommendations were approved.

Rail Failure Statistics

The usual report on rail failure statistics was presented by W. C. Barnes, engineer of tests of the committee. Covering the year ending December 31, 1940, the statistics given in the report were compiled in accordance with the standard method of basing the failure rates on mile-years of service in track. In line with usual practice, the report included analyses, presented in the form of charts and tables, of rail failures by individual mills and for all mills. One of the tables in the report gave the average number of failures per 100 track miles, accumulative from one to five years, for the rails rolled by all mills each year. It was pointed out that the 1935 rollings, whose period of observation is now concluded, show an average of 51.0 failures per 100 track miles for the five-year period. This rate compares favorably with those of earlier rollings, with the single exception of those for 1934, which had the record low failure rate of 35.8.

Transverse Fissure Failures

The customary report on transverse fissure failures was also presented by Mr. Barnes, which contained figures that constituted a cumulative record of transverse fissure failures that had been reported up to and including December 31, 1940. They included all transverse-fissured rails reported, whether located by actual breakage in service or detected before breakage by inspection or test. The statistics were presented in the form of a table showing transverse-fissure failures on individual roads by years, divided between service and detected failures, a chart showing the yearly trend of fissure failures, a table showing the accumulated transverse-fissure failures reported to December 31, 1940, by years and by mills, and charts showing failure rates by mills.

The data revealed that 4,721 service failures and 15,064 detected failures occurred in 1940, a total of 19,785. This compares with 5,765 service failures and 13,823 detected failures in 1939, a total of 19,588. Thus, as compared with 1939, the number of service failures occurring in 1940 showed a decrease of 1,044, while detected failures increased 1,241, giving a net increase in the total failures of 197. A feature of the report was a tabulation showing the number of fissure failures occurring in the first year for all rollings since 1924.

Controlled-Cooled and Brunorized Rail

Another report by Mr. Barnes presented statistics to show the tonnages of controlled-cooled and Brunorized rail that have been purchased by various railroads and the performance of such rails in service. Figures as to quantities were given in a table which listed the tonnages of controlled-cooled and Brunorized contract rail that had been purchased by the roads represented on the Rail Committee to June 30, 1941. This table shows that the total tonnage purchased by these roads was 4,003,623, of which 3,863,372 tons were controlled-cooled and 140,251 tons were Brunorized. This represents an increase of 841,166 tons of controlled-cooled rail and 16,378 tons of Brunorized rail over the tonnages reported to June 30, 1940.

Included in the report was a table giving the failures that had been reported to November 17, 1941, in controlled-cooled and Brunorized rail. These figures showed that a few transverse and compound fissure failures had been reported in controlled-cooled rail, but Mr. Barnes said an investigation developed the fact that all but two of these were attributable to causes which the controlled-cooling process does not eliminate, namely, inclusions, gas pockets and overloading. Also, he said that investigation of the two failures that originated in shatter cracks developed the fact that the rails involved were rolled before suitable cooling box covers were in use. Pointing to the fact that a number of fissures have developed in Brunorized rails rolled prior to the change that was made in that process in April, 1938, Mr. Barnes said that no fissures have been reported in Brunorized rails made under the revised process.

Cause and Prevention of Rail Battering

Pointing out that, in collaboration with the Rails Investigation at the University of Illinois, it is conducting a field test of heat-treated rail ends on the Chesapeake & Ohio north of Carey, Ohio, the committee said that there have been no new developments in this test since its progress report of March, 1941. It reported that the gross tonnage which had moved over this test track from the time the test was started up to October 31, 1941, was 105,374,840 tons.

Referring to the field test of various methods of building up battered rail ends that has been undertaken in a stretch of the southbound main line of the Richmond, Fredericksburg & Po-

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tomac near Penola, Va., the committee said that, for purposes of the test, the track was divided into 11 panels of 50 joints each. One panel was assigned to each of eight railroads, two panels to one railroad, and one panel to a contractor, with the understanding that each participant in the test would build up the rail ends in its assigned panel, using its own employees and its own methods of building up rail ends. The work was done in accordance with this plan during the week of May 5, 1941.

Economic Value of Different Sizes of Rail

Reporting progress in the study of its assignment to determine the economic value of different sizes of rail, the committee said that additional information had been gathered during the last year with a view to checking ratios of the different sizes of rail which had previously been worked out on a tentative basis, but before presenting a further report it desires to give the subject more study.

Continuous Welding of Rail

Regarding its assignment to investigate the continuous welding of rail, the committee reported that it was continuing its study of the performance of butt-welds in service. This year it presented a tabulation of additional service failures of continuous welded rail in six of the installations that were listed in the report that was presented last year on this subject. Also, the report for this year included a second tabulation in which data concerning the various installations of continuous welded rail and the failures were summarized to date. In this tabulation the installations were listed according to the types of welds, the other information given including the name of the road, the length of the installation, the number of welded joints, the weight of the rail, whether bars were ever applied, the maximum wheel load, the annual tonnage, the type of traffic, the train speed, the date installed, and whether the installation is in open track or in a tunnel.

Service Tests of Joint Bars

A progress report was presented by the committee on the field tests of various types of joint bars that were installed in 1937 on the Atchison, Topeka & Santa Fe west of Streator, Ill., and on the Pennsylvania east of Valparaiso, Ind. It stated that observations and measurements of the test installations were continued during 1941, the principal measurements including (a) joint camber on the rail head, (b) rail surface profile, (c) out-to-out distance of the bars, and (d) bolt tension in the bars on the A. T. & S. F. The significance of these various tests, and the manner in which they are made, were discussed at some length in the report and results to date were given in the form of tables and charts. The report was concluded with a number of comments which, according to the committee, were given to indicate contemporary trends and conditions in regard to certain features of the test joints and track. These trends and conditions, it said, will undoubtedly continue and develop further to permit more definite conclusions to be drawn.

Investigation of Joint-Bar Failures

In a progress report on its assignment to investigate joint-bar failures and give consideration to the revision of designs and specifications, the committee first described briefly the nature of previous reports on this subject. Then, pointing out that a rolling-load machine for testing full-size assembled rail joints has been in use at the University of Illinois for several years, the committee said that it had concluded arrangements for conducting further tests with this machine, these tests to be started this year. The purpose of the tests, it said, will be to determine (a) the effect of "cocked" bars, (b) the effect of the design of bars, (c) the effect of bolt tension on rail-end breakage, and (d) the fatigue strength of joint bars.

Brief reference was also made to the service test of joint bars that is under observation on the Chicago, Burlington & Quincy near Ft. Morgan, Colo. Observational measurements of these bars were made during the year, but the committee reported that the amount of traffic carried by the test section and the resulting joint-bar wear are not yet sufficient to justify definite conclusions.

Corrugated Rail—Causes and Remedy

The committee's report on its assignment to make a study of corrugated rail consisted of a discussion of the progress that has been made to date. Stating that a preliminary consideration of this subject suggested two possible methods of approach, namely, (1) through a questionnaire, and (2) through a review of studies made by others, the committee said it had concluded that the questionnaire would prove the most effective source of information on the prevalence of corrugations, the conditions under which they occur, and their effect on track maintenance and train operation. Accordingly, a questionnaire was circulated among the larger roads, the replies to which were summarized in a general way in the report. The committee did not consider it necessary to present the information obtained in detail; but it plans to prepare a statement later showing the prevalence of corrugations.

Inquiries made by the committee regarding investigations made by others developed the fact that a committee of the American Electric Railway Engineering Association, now the American Transit Association, had made a complete and exhaustive study of the problem. The findings of this committee, as well as the practice of some street railway companies regarding the grinding of corrugated rail surfaces, were discussed briefly.

Rail Fractures Under Engine Burns

A brief progress report was submitted by the committee on its assignment to investigate the development and characteristics of fractures under engine burns in rail. First, the committee discussed the causes, characteristics, and places of occurrence of engine burns and the manner in which they develop into fractures. It said that statistics are being gathered to show the prevalence of rails removed because of the presence of engine-burn fractures, and requested the co-operation of the members in furnishing the committee with such information. The committee stated that it had made a number of tests of rails with and without engine burns, and of some in which engine burns had been repaired by some form of welding, but added that no definite conclusions had yet been reached.

The report was received without comment.

Eighth Progress Report on Rails Investigation

The eighth progress report of the joint investigation of fissures in Railroad rails that is being carried out by the Committee on Rail and the Rail Manufacturers Technical Committee was appended to the report of the Rail committee. Presented by Prof. H. F. Moore of the University of Illinois, who has been in charge of the investigation since its inception in 1931, the report was composed of six chapters, prepared by Prof. Moore and other members of the test party, each of which dealt with a specific phase of the investigation.

The six chapters of the report consist of (1) a discussion of the results of field tests of end-hardened rail carried out in the Chesapeake & Ohio; (2) a discussion of the results of laboratory tests that were made on cracked end-hardened rails taken from the C. & O. test track; (3) a report of the results of recent metallurgical tests on rails that were made to obtain information regarding the development of shatter cracks; (4) a report on the service records of controlled-cooled and Brunorized rails; (5) a comparison of the drop and bend tests for rails; and (6) a statement of the membership of the advisory committee for the investigation and of the test party, acknowledgments for service rendered in the investigation by various individuals and organizations, and an outline of the plans for 1942.

In the latter connection, it was stated that plans for 1942 are subject to modification in view of the war situation. However, they were summarized as follows: "There is planned further study of actual temperature conditions in control-cooling containers at steel plants, especially during cold weather, further study of results of the field tests for batter at Carey, Ohio, (C. & O.), and the development of the bend test for rails." Appended to the progress report was a study of the drop test for rails.

In presenting the report, Professor Moore departed somewhat from the printed text to show a large number of slides to illustrate the points he desired to emphasize. Among them, he showed the effect of case hardening, that is, compacting under rolling wheel loads, on the welded and hardened rail ends, and explained the development of "weeping" cracks. He also showed pictures of a number of types of failure other than transverse and compound fissures to emphasize that troubles with rail fail-

ures are not at an end, even if success attends the effort to eliminate fissures. These included particularly head checks and shelling along the gage side of the rail head. He reviewed at some length the tests that are now under way at the University of Illinois, enlarging upon this section of the report.

Uniform General Contract Forms

W. G. Nusz, Chairman*

Reports were submitted by this committee on three of its four assignments, two of which were offered as information, while the third contained material for inclusion in the Manual.

Revision of Manual

At the request of the Electrical section, Engineering division, A. A. R., the committee's subcommittee on Revision of Manual has been collaborating with Committee 1—Power Supply, of that section in revising the form of agreement for the purchase of electrical energy for other than traction purposes. This year a revised form was submitted as information, which, if adopted later, will replace the form that now appears in the Manual.

Preparing a Lease for Air-Right Development

A final report, offered as information, was submitted by the committee on its assignment to make suggestions for use in preparing a lease for air-right development. The first part of this report discussed in a general way the problems connected with the preparation of a long-term lease for air-right development, mention being made of the need for fixing the rental at an adequate, but not excessive figure, and the importance of obtaining a responsible lessee.

It was pointed out that conditions in the railroad field are so variable that it is impossible to draft a long term air-right lease which could be used without change in any part of the United States. For this reason engineers seeking information on this subject were referred by the committee to a book entitled "Problems of Long Term Leases," which is published by the University of Michigan School of Business Administration. A list of ten conclusions appearing in this book was summarized in the committee's report. Also appended to the report was a list of available documents pertaining to this subject. The summarized conclusions follow:

(1) The chief points of difficulty that arise in connection with the long-term lease are (a) fixing the rent, (b) establishing security for the lessor, (c) termination provisions, and (d) condemnation provisions.

(2) A flat rental based upon a fair rate of return upon the value of the land at the time the lease was written represents a payment which is fair to both the lessor and the lessee. The rent thus established may be paid at such times and in such amounts as best suit the convenience of both parties to the lease.

(3) Step-up or step-down rentals are properly used only to arrange, to suit the convenience of the parties, the date and amounts in which the rent is to be paid.

(4) Reappraisal leases represent a method of fixing rents which is theoretically fair to both parties, but which in practice proves difficult of operation except in eastern cities where the length of the term between reappraisals is usually 21 years.

(5) The most common type of security provided for the payment of rents is the erection of a building by the lessee; a deposit of cash or liquid securities protects the lessor during the period of the erection of the structure; a cash payment for buildings already on the property is considered as security when the buildings are available for use by the lessee.

(6) (a) It is recommended that some provision be made to give the lessor security as any structure built or to be built on the property becomes obsolete.

(b) With respect to taxes, it should be provided that the lessee should pay all taxes levied and assessed due to the air rights lease and also any increase in taxes levied against the lessor on its property under the air rights lease. It should also be provided that in states where an income tax might be levied against the lessee or a leasehold tax might be levied on the improvements erected under the air rights lease, all such charges should be assumed by the lessee or, if paid in the first instance by the lessor, that they should be promptly re-paid within 30 days after receipt of bills therefor.

(7) Termination provisions which grant the building free to the lessor at the end of the term have some objectionable features. These may be met by providing that the lessor shall either purchase the building at its appraised value at the time of termination, or allow the lessee to purchase the land at a specified price. When neither party takes advantage of the opportunity thus provided, it is suggested that the parties become tenants-in-common, sharing the property in the proportion which the appraised value of the land bears to the appraised value of the structure.

(8) Three types of condemnation provisions are in common use. The first provides that the award in the case of condemnation shall be divided between the parties in the proportions which the appraised values of their respective estates bear to each other, or to the value of the property as a whole. The second type of provision provides that the lessor shall receive that portion of the award which is made on account of land value, and the lessee that portion awarded for building. The third type of condemnation provision grants to the lessor the capitalized value of the rentals reserved, the balance going to the lessee.

(9) The condemnation clause which provides that the award shall be distributed to the parties in proportion to the appraised value of their respective interests is recommended.

(10) Practices in connection with the writing of long-term leases vary between different sections of the country but are fairly uniform within the same section.

Form of Agreement for Wire or Cable-Line Crossings

The report of the committee on its assignment to prepare a form of agreement for wire or cable-line crossings was prefaced with an explanatory paragraph which reviewed previous progress on this assignment. The committee pointed out that a form had been presented previously but that this form had recently been revised in some respects and then approved by the various organizations concerned.

This revised form, together with a data sheet to be used as an application form, were presented with this year's report with the recommendation that they be accepted as recommended practice and printed in the Manual. The committee also recommended that certain conflicting material be deleted and that the word "Wires" be deleted from the heading of the form entitled "Form of License for Wires, Pipes, Conduits, Drains, Hopper Pits and Other Structures on Railway Property."

All of the recommendations of the committee were approved.

Report on Buildings

L. H. Laffoley, Chairman*

This committee presented reports on three of its six assignments, including a report on Revision of Manual, with recommendations; a progress report, submitted as information, on another subject; and a final report, also submitted as information, on a third assignment.

Revision of Manual

Under Revision of Manual the committee recommended a number of revisions in Section X of the Specifications for Railway Buildings, Built-Up Roofing, which applied for the most part to the matter under "Materials." The committee also submitted specifications for built-up roofing, Types A-3 and A-4, which it recommended for adoption and publication in the Manual.

Specifications for Railway Buildings

In reporting on its assignment to prepare specifications for railway buildings, the committee presented as information a set of specifications covering welded structural steel and iron for use in buildings. Entitled "Welded Structural Steel and Iron," these specifications are presented under nine general headings, namely, General, Material, Loads and Forces, Unit Stresses, Design, Fabrication, Inspection, Weighing and Shipping, and Erection. The committee invited criticism of, and comment on,

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* Assistant Engineer Buildings, Canadian Pacific.

the specifications, and said that it was planned eventually to recommend them for inclusion in the Manual.

Warehouses for Handling Quick-Frozen Products

The report submitted by the committee on its assignment to determine the requirements of railroad warehouses for handling quick-frozen products consisted of a comprehensive discussion of all phases of the subject. It was submitted as information. In this report, the committee first defined and described quick-frozen foods, discussed the purpose of the process, the methods employed and other considerations. It then traced the development and growth of the quick-freezing industry, pointing out that it had its inception in 1924, that it has grown rapidly since 1932, and that in 1938 the total distribution of quick-frozen products was in excess of 250 million pounds.

Next, the committee discussed the location of warehouses for handling quick-frozen foods and various aspects of the problem of loading and unloading cars. It then took up the subject of design, pointing out that the same type of construction specified for general cold storage plants may also be used for quick-frozen products provided the insulation is increased in thickness to insure constant temperatures of —5 deg. F. to —10 deg. F. for storage, and around —30 deg. F. for freezing rooms. The arrangement, number and size of the rooms and other facilities were also given consideration.

Problems encountered in the transportation and distribution of quick-frozen products were also discussed in the report, it being pointed out that the extensive shipment of such products by rail has raised the need for an extensive refrigerated warehouse storage system. Reference was also made to the methods of refrigeration employed in railroad cars and to the use of portable refrigerated containers for frozen foods. Methods of stocking quick-frozen foods in refrigerated rooms and the desirability of pre-cooling refrigerator cars and of keeping the cars, the storage space and the products at a low temperature during loading were also discussed. The committee named two essential requirements for the protection of quick-frozen products during transportation and distribution, as follows:

(1) The products must be maintained at a low temperature of about 0 deg. F.

(2) Temperature fluctuations must be avoided so that the permissible temperature range for storage shall be maintained between 0 deg. F. and —5 deg. F.

The committee concluded its report with the following remarks:

No special provision in terminal or local freight warehouses is recommended for handling quick-frozen products. In the larger cities, cars are generally unloaded into large cold storage plants where the bulk storage is held until it is delivered by automobile trucks to the local distributor's small warehouses.

The trade in the smaller cities is supplied by l. c. l. shipments from the cold storage plants in the larger cities and the products are hauled by trucks to small local cold storage plants or direct to the retailer.

Retailers selling products of the larger advertised brands of quick-frozen foods are provided with refrigerator cases made for that purpose, which are capable of holding the food within the required temperature range for several weeks.

The entire report was received without discussion.

Iron and Steel Structures

J. E. Bernhardt, Chairman*

This committee made a number of recommendations and submitted certain material as information under Revision of Manual, and also submitted a progress report, presented as information, on rigid-frame design.

Revision of Manual

The committee presented a tabulation of revisions in the specifications for steel railway bridges, most of which, being purely of an editorial nature, were offered as information. The committee recommended that the reference in the manual to specifications for steel highway bridges be withdrawn. This recommendation was approved.

One of this committee's assignments is to develop revised specifications for steel railway turntables. This year a set of such specifications was submitted as information with a statement to the effect that it would be offered later for adoption and publication in the Manual to replace the existing specifications.

Rigid-Frame Design

Reporting on its assignment to investigate rigid-frame design, the committee presented as information a set of specifications for the design of rigid-frame steel bridges, explaining that it was the intention to submit them later for adoption and inclusion in the Manual. Containing frequent references to the present specifications for steel railway bridges, the specifications for rigid-frame bridges embody paragraphs on the articulation of footings, foundations, spacing, deflections, distribution of live load, impact, loads and forces, combined stresses, unit stresses, bracing stiffeners at points of bearing, and connections.

This report was received with only minor discussion.

Records and Accounts

C. A. Knowles, Chairman*

Progress reports, presented as information, were submitted by this committee on seven of its nine assignments, one of which contained conclusions that were recommended for publication in the Manual.

Revision of Manual

Under Revision of Manual the committee reported that it had planned a complete re-arrangement of the entire Records and Accounts chapter in the Manual, with the necessary renumbering of pages, forms and figures. Under the new plan the material in the chapter would be divided into three general sections as follows: (1) General Records and Reports (pages 1 to 50, inclusive); (2) Roadway and Structures—Records and Reports (pages 51 to 150); and (3) Office and Drafting Room Practice (pages 151 to end). Gaps would be left in each section to permit new material to be added in the future, it being expected that the greatest expansion would occur in Section 3. Since the changes contemplated were editorial in nature, it was not necessary that they be approved by action of the convention.

Bibliography

Following a practice of long standing, the committee submitted as information a bibliography of books, pamphlets and periodicals containing matter pertaining to railroad records and accounts. This year's compilations contained references to material published during the period from November 1, 1940, to November 1, 1941.

Office and Drafting Room Practices

The committee presented reports on all three phases of its assignment covering office and drafting room practices; namely, (a) drafting equipment and tools, (b) specifications of materials to be used for drawings and draftings, and (c) standard system for filing drawings. All of this material was offered as information except a set of conclusions that were recommended for adoption.

Under the first sub-topic—drafting equipment and tools—the committee discussed several new developments, one of which was fluorescent lighting. Starting with a discussion of the lighting requirements of drafting rooms, the committee then listed the advantages of fluorescent lighting as set forth by the manufacturers. These were examined in some detail and the results of a canvass of users were given, the latter showing that the division of opinion as to the merits of fluorescent lighting is approximately "fifty-fifty." The following conclusions were presented:

(1) Fluorescent lighting is still, to some extent, in the experimental stage.

(2) The superiority of fluorescent lighting over other types for use in the drafting room is not yet definitely established.

(3) Satisfactory lighting can be had with either the fluorescent

* Bridge Engineer, Chicago & Eastern Illinois.

* Valuation Engineer, Chesapeake & Ohio.

or incandescent types if properly designed and installed to meet the visual requirements.

Float lettering is another new development that was described. Pointing out that this method is an adaptation of the paster method in which the lettering is first printed on paper, then cut out and pasted on the map, the committee said that it is a patented process and that it may be used only by obtaining a license from the inventor. Other information given included details of the method, its cost, and a description of the equipment required.

Referring briefly to the use of giant cameras for photographing aircraft plans as part of a scheme for speeding up production, the committee passed on to a discussion of microphotographic cameras for office use. It pointed out that such cameras are now used in some railroad offices for photographing newspapers, manuscripts and other records, and that they may eventually find their way into the drafting room. According to the committee, such cameras are now in use by large newspapers and by many government offices and agencies. The essential equipment required and various considerations involved in its use were described, after which the committee pointed out how microphotography can solve the filing problems of drafting rooms.

Under the second sub-assignment—specifications of materials to be used for drawings and draftings—the committee pointed out that a report on this subject that was made at the 1941 convention included a statement of conclusions. In this year's report these conclusions were offered for adoption. They are as follows:

(1) Except for requirements laid down to the paper mills by the drawing supply companies, there are no specifications now in use or available for the ordering of drawing and drafting materials.

(2) The present almost universal practice of ordering "trade name" materials by catalog reference and from samples, limiting the selection to standard types having general quality and properties suited to the major requirements of the office, is quite satisfactory for railroad work.

These conclusions were adopted.

Regarding the third sub-topic—standard system for filing drawings—the committee pointed to the fact that a report was made on this topic last year and stated that, in its opinion, the standardization of methods is impractical because of the differences in individual requirements.

Maintenance Accounts and Statistical Requirements

Reporting on its assignment to develop recommended practices to be followed with respect to maintenance of way accounts and statistical requirements, the committee said that it had had under study a system of recording the characteristics and location of electrical equipment. After pointing to the necessity for such a record, the committee described the system that it had been investigating. A card record for each unit was suggested and a proposed form for the card was submitted. Also, a suggested form was submitted for a postcard to be used in notifying headquarters of any changes made in units in the field.

Regulatory Bodies and Courts

The report of the committee included its usual resumé of developments of the current year in connection with regulatory bodies and courts. This consisted largely of a review of the activities and orders of the Interstate Commerce Commission relative to valuation matters. The committee reported that there were no noteworthy decisions during the year by the U. S. Supreme Court involving valuation issues, but it said that the Federal Communications Commission has instituted an investigation involving the American Telephone and Telegraph Company to determine what should constitute the base for telephone rates.

I. C. C. Valuation Orders, Reports and Records

The committee reported that it had continued its investigation of the subject, "Study of Valuation Order No. 3 Reports and Records to determine if further simplifications are possible," but that no specific changes in requirements had developed. Further consideration was also given to the subject "Form of Order No. 3 reports in connection with joint projects, federal-railroad," and a procedure was outlined for dealing with overhead highway crossings, this procedure having been made the subject of instructions issued by Commissioner Carroll Miller of the I. C. C. The committee also outlined certain litigation that was in progress in connection with the reorganization of the Western Pacific.

Revision in I. C. C. Classification

One of this committee's assignments is to report on changes in, and revisions and interpretations of, I. C. C. accounting classifications. In accordance with its usual practice, it presented a list of proposed accounting orders or rulings submitted by the I. C. C. Bureau of Accounts, concerning which summarized opinions of the members of the committee had been submitted to E. H. Bunnell, vice-president, Association of American Railroads. Also included was a list of the rulings that were in the hands of the committee for review at the time the report was prepared. In addition, the report included a list of I. C. C. orders of interest to engineers that had been issued since its last report, and a list of new and revised rulings that had been issued by the Bureau of Accounts.

This entire report was received without further discussion.

Yards and Terminals

C. H. Mottier, Chairman*

During the year this committee gave consideration to eight subjects, on five of which reports were presented. Of these, four were progress reports, submitted as information, while the fifth was a final report containing recommendations regarding Manual material.

Terminal Facilities for Electrical and Air Conditioning Equipment

In reporting on the terminal facilities required for servicing electrical and air-conditioning equipment in passenger cars, the committee pointed out that a report on this assignment had been made in full last year, except that definite recommendations for the location and spacing of electrical outlets were withheld pending completion of the committee's investigation. In furtherance of this investigation the committee, acting jointly with Committee 1—Power Supply of the Electrical section, A. A. R., submitted a questionnaire to the railroads, receiving replies from 51 lines and terminal companies. These replies indicated that the constant potential, or modified constant potential, method of charging batteries is favored over the constant current method, and that the use of portable motor-generator sets, operating from 220-volt alternating current, is rather generally favored for battery charging at small terminals and for special requirements at other locations.

Included in the report were two paragraphs containing recommendations regarding the location and spacing of electrical service outlets, one paragraph applying to station tracks and the other to coach yards. The committee recommended that these paragraphs be adopted for publication in the Manual.

Scales Used in Railway Service

In a brief progress report on its assignment pertaining to scales used in railway service, the committee pointed out that last year it had presented as information a tentative draft of specifications for the manufacture and installation of hand-operated grain-hopper scales, and had requested comments and criticisms thereon. It also reported that it had been active during the year in collaborating with other parties interested in this subject, and that it had given further study to the ultimate form of the specifications to the end that they may be acceptable to all concerned. The hope was expressed that a final draft of these specifications would be submitted for approval next year.

These recommendations were approved.

Classification Yards

The committee's report on classification yards was devoted this year to a discussion of communication systems at such yards, which was submitted as information. Pointing out that communication facilities are important to the efficient and economic

* Chief Engineer, Illinois Central.

handling of traffic in yards and terminals, the committee said that many different methods have been devised and used to advantage.

The first section of its report was devoted to a listing and description of the various methods that are employed for communication purposes, including hand signals, horns or whistles, telephones, loud-speaker systems, the Teletype, pneumatic tubes, conveyor belts, wayside signals, cab signals, and locomotive communication systems. The committee then described the manner in which these different methods are applied in actual practice to the various phases of yard operation, such as the reception of trains at the receiving yard; the movement of road engines from the receiving yard to the enginehouse; the transmission of waybills to the yard office, of instructions for inspection, and of car lists to hump and retarder outfits; the moving of trains from the receiving yard to the hump; humping and trimming; the make-up of trains for departure; the transmission of waybills for departing trains; and the despatching of trains.

Modernization of Passenger Terminals

A comprehensive report was presented by the committee on the modernization of passenger terminals, a newly-assigned subject. In an introduction to the report, the committee emphasized the desirability of providing attractive passenger facilities as a means of creating a favorable impression in the minds of patrons. The body of the report consisted of a discussion of various aspects of the problem and of the considerations involved. It states, for instance, that there is a need at many terminals for better directional information, longer station tracks and platforms, better fire protection, and "good housekeeping."

Discussing the necessity of terminal modernization, the committee traced recent trends in the characteristics of passenger transportation, such as the decline in this type of business that began in 1920 and the subsequent improvements in service that were effected in an effort to halt the downtrend. The committee then told how changing habits of travel on the part of the public had made it necessary for the railroads to make certain improvements in their facilities for the purpose of bringing them into line with the expectations and habits of prospective passengers. This was followed by a discussion of the factors that should be considered in planning the modernization of various elements of the passenger terminal, such as the waiting room, the ticket counter, toilet facilities, and the heating system. The desirability of designing station buildings to harmonize with their surroundings was also discussed.

A considerable portion of the report was given over to descriptions of specific cases of passenger terminal modernization. In planning such projects, the committee said that the necessity of giving proper consideration at all times to the economic factors involved was a fundamental principle. Appended to the report was the following list of 20 tentative conclusions:

(1) Nothing can take the place of or do as much for a terminal as cleanliness and good housekeeping.

(2) Longer tracks and platforms often are required to take care of the longer trains now in general use. This in turn requires careful attention to revised signaling.

(3) Fire hazards should be considered and perhaps sprinklers should be provided at certain points.

(4) Directional signs should be given particular attention. They should be displayed conspicuously, easy to see but not gaudy; and they should be repeated so that if a passenger going in the wrong direction misses one, another farther along will set him right. This is especially important where corridors are long and winding and different facilities are at different levels.

(5) Taxis and private automobiles which have displaced horse-drawn vehicles and trolley cars need parking space while waiting for trains, either on the station grounds or adjacent thereto.

(6) Because of changes in habits and in facilities available for travel to and from terminals, less waiting time in the station is now the rule, but passengers expect better, though not necessarily bigger, accommodations—in the concourse, in the waiting room, when buying tickets or checking baggage, in the toilet facilities and in general service conveniences.

(7) A single, combined, waiting room can be substituted to advantage for the old arrangement of two separate rooms, but a proper and attractive retiring room for women should be provided.

(8) The old smoking room, which often was used largely as a loafing place for undesirables, may be abolished when extensive changes are made.

(9) Generally, coin-locked pay toilets should be substituted for some of the former open toilets and, at the larger terminals at least, coin-locked dressing rooms and baths may be provided.

(10) Rail and bus terminals can sometimes be combined with advantage to both services.

(11) Substitution of modern heating, properly planned, often will result in a reduced cost for its operation and maintenance, as well as providing better service.

(12) Substitution of a closed-in concourse, with a tight partition between it and the train shed in place of an open grill, with sufficient heat supplied to make the concourse comfortable for passengers in winter weather, is desirable and is becoming general, as it will permit use of the concourse as an adjunct to the waiting room. Many passengers prefer to wait where they can see the trains if they can do so without discomfort.

(13) Substitution of modern furniture such as chairs, couches and a few tables in place of the old, stiff, straight-backed benches, and the substitution of modern lighting and attractive painting with due attention to the color scheme, will transform an old-type waiting room into a pleasing room at relatively small expense.

(14) Improvement at the ticket counter by the substitution of larger openings for the former grilled windows or, at points where it is feasible to do so, replacement of the windows and grills by an open counter, makes for a more friendly atmosphere. Provision for the protection of the money and the ticket stock should not be overlooked.

(15) The character of the country and the prevailing type of architecture in the locality should have careful attention. If the present station is not in keeping with its surroundings, frequently it can be brought into harmony by careful study and minor structural changes at moderate cost. Sometimes the stripping off of elaborate cornices, fussy ornamentation and the like, will not only bring the structure into proper relation with its environment but will also reduce maintenance expense enough to make the change profitable in itself.

(16) Moving stairs aid in overcoming considerable vertical distances, aid in handling passengers quickly, and are a convenience, particularly to the old or infirm. Ramps in place of stairs, to a considerable extent, tend to serve the same purpose where room is available.

(17) Balloon train sheds are definitely a thing of the past. Umbrella, butterfly or other modern type of platform shelter should be substituted where practicable when major changes are to be made.

(18) Care should be taken to make it inconvenient for non-passengers to use the concourse and passways as a thoroughfare, thus interfering with patrons of the railroads.

(19) Passageways, over or under adjoining streets to the opposite sidewalks, should be provided where feasible, through proper co-operation between public authority and the railroad.

(20) Economic considerations should never be lost sight of in studying improvements contemplated in connection with a passenger terminal.

Bibliography

Following its usual practice, the committee submitted a bibliography of published articles and papers on passenger stations and terminals; freight stations, terminals and yards; locomotive terminals and railroad shops; and rail-and-water terminals.

Following the presentation of the report the chairman paid tribute to E. E. R. Tratman who has been a member of the committee since it was organized in 1889.

Wood Bridges and Trestles

R. P. Hart, Chairman*

The report of this committee was confined to one assignment, namely, to develop specifications for the design of wood bridges and trestles. In reporting on this assignment last year the committee presented as information a tentative draft of specifications for the design of wood bridges and trestles for railway loading, which was offered for consideration and constructive criticism.

* Bridge Engineer, Missouri Pacific.

During the year these specifications were revised and were submitted again this year with the recommendation that they be adopted and published in the Manual.

Aside from the foreword, the specifications are divided into four general sections as follows: (1) General Features of Design; (2) Loads and Stresses; (3) Unit Stresses; and (4) Details of Design. They include three figures or charts, one of which gives an approximate method of analysis to determine the division of the load among the several piles of a bent, while another gives a method of computing the distribution of the load to the stringers in pile trestles. The third chart presents a method of determining graphically the allowable unit stress in a piece of timber in an inclined direction with respect to the grain.

There are four tables in the specifications, one of which gives the working unit stresses for structural timber. Another gives unit compression (column) stresses for standard stress grades, while the third table gives the basic unit stresses for bearing on bolts. The fourth table presents figures showing the relationship between the basic stress for bearing on bolts and the ratio between the lengths and the diameters (L/d) of bolts.

After an extended discussion involving criticism of several features of the specifications they were referred back to the committee for further consideration.

Special Report on Impact

J. B. Hunley, Chairman*

This committee presented progress reports, submitted as information, on five of its seven assignments.

Tests of Short Steel Spans With Open Floors

One of the assignments of this committee is to conduct impact tests of short steel spans with open floors, giving consideration to the effect of track inequalities and worn wheels on such spans. It reported that during the last season tests had been made on one 20-ft. I-beam span and one 30-ft. deck girder span, both with open decks. Tests were also made on a 22-ft. I-beam span and a 23-ft. deck girder span, both with ballasted decks.

In making each of the tests, runs were made first with a battered joint at or near the center of the span. The rails were then so arranged that there would be no joints on the spans, and the runs repeated. Both steam and Diesel locomotives were used in making the tests. Stresses were measured at various points by means of magnetic strain gages, the results being record on an oscillograph. It is expected that a final report on the results of the tests will be made next year.

Tests of Steel Spans with Ballasted Decks

In reporting on its assignment to make tests of steel spans with ballasted decks, the committee pointed out that the tests already mentioned on the two short spans with ballasted decks involved structures with timber decks, and that the data obtained will probably furnish sufficient information for short spans of this type. In addition, the committee reported that it has available for analysis data obtained from previous tests on an 81-ft. deck girder span with a ballasted floor on a poured-in-place concrete deck. It is planned to make tests on other types of structures this year.

Dynamic Shear in Steel Girders and Truss Spans

Regarding its assignment to make tests of dynamic shear in steel girders and truss spans, the committee reported that, in connection with work under another assignment, tests had been made of the dynamic shear in the web members and the end posts of a 102-ft. 6-in. riveted through-truss span. As opportunity presents itself, the committee plans to conduct tests of this nature on other spans, both under moving loads and with the oscillator.

Analysis of Additional Data from Impact Tests

The committee reported that it had been furnished by the Pennsylvania with complete data obtained as a result of tests made on an 81-ft. ballasted deck girder span, with a poured-in-place concrete deck, at Elkton, Md. Both steam and electric locomotives were used in making the tests, and the speeds attained were said to be very high. The stresses were measured with magnetic strain gages and recorded by means of oscillographs. The committee said that the analysis of this data is now under way and that the results will be reported next year.

Damping Factors of Steel Spans

In carrying out its assignment to determine the damping factors of steel spans and the variations in the amount of damping with changes in loading, the committee reported that it had conducted tests on a riveted through-truss span 102 ft. 6 in. long. By means of an oscillator attached to the span, it was vibrated at different frequencies under various conditions of loading as follows: (1) unloaded; (2) loaded with a stationary cut of heavily-loaded cars; and (3) loaded with a stationary heavy locomotive. By means of magnetic strain gages, stresses were measured in various members and in parts of members, and deflections at the center of the span were recorded by deflectometers.

The committee said that a large amount of interesting data had been obtained, which had not been completely analyzed. It explained that before any definite information as to damping can be obtained, it will be necessary to test other spans; also, that it intends to install the oscillator on suitable spans when tests are being made under moving loads.

The report was received without discussion. Following the presentation of the report G. M. Magee, research engineer, Engineering Division, A. A. R., showed moving pictures of the manner in which the tests were made and of the instruments that were used in making them.

Waterproofing of Railway Structures

J. A. Lahmer, Chairman*

In addition to a number of recommendations under Revision of Manual, this committee presented progress reports on two different phases of its general assignment which is to keep the association informed of developments in the waterproofing of railway structures.

Revision of Manual

A number of minor changes were recommended by the committee in the specifications for membrane waterproofing. Among these was a suggested change in the section on "fabric" to include the phrase "spraying the fabric with saturant." This change, said the committee, recognizes a method which has produced treated fabric for a number of years that is equal to that produced by passing the fabric through the saturant. Another recommended change would eliminate the requirement for 5-oz. cloth having a thread count of 18 to 24, the reason for this change being that information had been received to the effect that such cloth is no longer available except on special order and at extra cost. Two other minor changes were also recommended.

All of these changes were approved.

Waterproofing of Railway Structures

The committee reported that the sum of $500 had been allotted to defray the cost of making comparative tests on waterproofing bitumens, the object being to determine the essential characteristics of bitumens available for waterproofing purposes in order to have a guide for use in reviewing specification requirements. Invitations were extended to 13 of the largest producers to furnish samples of their products for testing and also to conduct parallel tests in their own laboratories. Samples were received from 10 producers, of which three will collaborate by conducting tests in their own laboratories. Those tests that require no special equipment have been started and are expected to be completed

* Engineer of Structures, New York Central System, West of Buffalo.

* Senior Assistant Engineer, Missouri Pacific.

early this year. The remainder of the tests will be completed later in the year.

In addition, the committee submitted brief comments on several revised specifications of the A. S. T. M. for waterproofing materials.

The report was received without further discussion.

Report on Masonry

J. F. Leonard, Chairman*

This committee presented reports on eight of its twelve assignments, of which three were progress reports containing recommendations regarding Manual material, four were progress reports presented as information, and one was a final report containing Manual material.

Revision of Manual

In its report last year the committee discussed the properties and uses of the five types of portland cement that were covered in the new specifications that had been developed by the American Society for Testing Materials. This year these specifications, including instructions for performing certain tests and analyses, were presented by the committee under Revision of Manual, with the recommendation that they be adopted for publication in the Manual in place of the present specifications for high-early-strength portland cement, portland cement and methods for sampling and testing portland cement. As stated in the new specifications under "Scope," they cover five types of portland cement, as follows:

Type I—For use in general concrete construction when the special properties specified for Types II, III, IV, and V are not required.

Type II—For use in general concrete construction exposed to moderate sulfate action, or where moderate heat of hydration is required.

Type III—For use when high early strength is required.

Type IV—For use when a low heat of hydration is required.

Type V—For use when high sulfate resistance is required.

The listing of the five types of cement is followed in the specifications by paragraphs covering the basis of purchase, definitions of portland cement, chemical limits (table), physical requirements (table), packaging and marketing, storage, inspection, rejection, and methods of testing.

The specifications for Portland cement were approved by the association.

Concrete for Use in Railway Structures

One of this committee's assignments is to develop specifications and principles of design for plain and reinforced concrete for use in railway structures. Under this general subject there are two specific assignments, one relating to concrete bridge-deck slabs of the non-ballast type. This assignment was the subject of this year's report, which consisted of a brief statement, submitted as information.

The committee pointed out that it had reviewed carefully the subject matter submitted previously and had kept in touch with recent developments. It said that one type of construction not previously reported on consists of stub or full-length crossties embedded in the deck concrete. This type, it reported, has been used extensively in tunnel and terminal construction with satisfactory results. The committee believes, however, that experience to date with this type of construction has not been sufficient to enable it to make recommendations in specification form at this time.

Progress in Concrete Manufacture

The specifications for cement that were submitted by the committee under Revision of Manual are a product of the work that it has done in connection with its assignment to report progress in the science and art of concrete manufacture. In its report on this latter assignment, the committee called attention to certain differences between the new specifications and those now in the Manual, reference being made to the differences in types, chemical limits, strength, fineness and soundness. Attention was called to a provision in the new specifications that reads as follows: "The purchaser should specify the type or types desired. When no type is specified, the requirements of Type I shall govern." For the time being this statement has the approval of the committee, but it proposes to continue the study of the merits of the different types of cement and the uses to which they are adapted with the hope that it will be possible to report on this subject next year.

The committee also called attention to the fact that, according to the specifications, it is permissible to ship cement in packages on which the type of cement is not marked. It expressed the opinion that it would be unwise to suggest any changes in this connection until the extent of the demand for the various types has developed, permitting the cement manufacturers to obtain an idea of what they will be called on to furnish.

Specifications for Foundations

Under its assignment to develop specifications for foundations, the committee submitted as information an extensive bibliography in which the material is listed alphabetically by the names of the authors or the organizations under whose auspices it was prepared. The bibliography covers the years 1931 to 1940 and is confined largely to articles on foundations alone.

Lining and Relining Tunnels

In carrying out its assignment to develop methods and practices for lining and relining tunnels, the committee presented last year a set of specifications for lining railway tunnels with metal liner plates and shotcrete. This year the committee recommended that these specifications, together with an insert showing a method of lining tunnels with shotcrete on liner plates, be accepted for publication in the Manual in the same form in which they appear in the proceedings for 1941, except for a change in the paragraph giving the scope.

In 1940 the committee submitted as information a set of specifications for lining railway tunnels with brick. This year these specifications, incorporating one minor change, were re-submitted with the recommendation that they be adopted for publication in the Manual.

Both recommendations of the committee were approved.

Pressure Grouting

In reporting on pressure grouting at the 1941 convention, the committee presented as information a set of specifications for the solidification of masonry structures by grouting. With one minor revision these specifications were submitted this year with the recommendation that they be adopted for publication in the Manual.

These specifications were adopted.

The committee reported that it was not prepared to submit specifications for the solidification of soils under foundations or of materials behind tunnel linings and subway walls. It said, however, that considerable information on these subjects had been accumulated and is under consideration as a basis for formulating specifications. In this connection, the committee offered as information a description, furnished by A. C. Irwin, assistant subway engineer, Department of Subways and Superhighways, City of Chicago, of grouting work carried out in the Chicago subway tunnels.

In the description, Mr. Irwin explained that pressure grouting has been carried out in the Chicago subways for two principal reasons, namely, to fill voids between the concrete and the liner plates, or between the liner plates and the clay, and to stop the leakage of water into the completed tunnel. Explaining that, with a minor exception, all of the initial system of subways in Chicago is built in clay, Mr. Irwin said that, due to the manner in which the tunnels were driven, the excavation was always larger than the lining. He then went on to describe the manner in which the spaces outside the lining were filled with roofing gravel blown through holes in the liner plates, after which low-pressure grouting was carried out. Also, he pointed out, further grouting was carried out after the concrete lining was placed in order to fill voids in the gravel packing as well as any spaces between the concrete and the liner plates.

Reporting on its assignment to develop specifications for concrete and reinforced concrete railroad bridges and other structures, the committee offered as information a set of such specifi-

(Continued on page 618)

* Engineer of Bridges and Buildings, Pennsylvania, Central region.

N. R. A. A. Presents Colorful Exhibit

68 companies participate in display of latest developments in equipment and materials adapted for railway construction and maintenance

IN presenting its exhibit coincident with the annual meeting of the A. R. E. A. at Chicago on March 16-19, the National Railway Appliances Association overcame unusual difficulties, in which it became necessary to turn to the exhibition hall of the Palmer House. While this location imposed some limitations with respect to both space and loading, thus preventing the display of the larger units of equipment which otherwise might have been shown, it had the advantage of being immediately adjacent to the convention.

Even under the limitations thus imposed, 68 companies participated in the exhibit which was broad in its scope, with many features of special interest to those in the track, bridge, building and water service departments. With prospects that maintenance activities for the year will exceed those of last year and substantially equal those of 1930, and with every indication pointing to a still wider use of work equipment, the exhibit contained many features that gave maintenance officers an opportunity to familiarize themselves with the latest developments and improved designs of those manufacturers who showed their materials and equipment, in a way and to an extent that cannot be equalled at any other time during the year.

The officers who were charged with the responsibility for arranging and conducting the exhibit of the N. R. A. A. this year were: President, John S. Hutchins (Ramapo-Ajax division, American Brake Shoe & Foundry Company), Chicago; vice-president, W. J. Hanna (Republic Steel Corporation), Chicago; secretary, C. H. White (Industrial Brownhoist Corporation), Chicago; treasurer, C. D. Young (Metal & Thermit Corporation), Chicago; directors—T. E. Rodman (Maintenance Equipment Company), Chicago; H. H. Talboys (Nordberg Manufacturing Company), Milwaukee, Wis.; R. B. Fisher (The Buda Company), Harvey, Ill.; V. E. McCoy (National Aluminate Corporation), Chicago; C. E. Ward (United States Wind Engine & Pump Co.), Batavia, Ill.; Lem Adams (Oxweld Railroad Service Company), Chicago; C. L. Mellor (Barco Manufacturing Company), Chicago; K. I. Thompson (Ingersoll-Rand Company), Chicago; and H. M. McFarlane (O. F. Jordan Company), East Chicago, Ind.; and chairman of relations, E. D. Cowlin (Eaton Manufacturing Company, Reliance Spring Washer div.), Massillon, Ohio.

At the annual meeting on March 17, President Hutchins reviewed the operations of the association for the year, and stated that while expenditures for the year have been slightly in excess of receipts, the finances of the association are still on a sound basis. He reported 68 exhibiting and 36 non-exhibiting members.

In the election of officers, Mr. Hanna was advanced to president; Mr. Young was elected vice-president; Mr. McCoy was elected treasurer; and Mr. White was re-elected secretary. Directors, three years—W. F. Kasper (Fairmont Railway Motors, Inc.); and W. A. Maxwell (P. & M. Company). F. P. Cullen (Cullen-Friestedt Company) was elected to fill the unexpired term of K. I. Thompson, who resigned.

The companies participating in the exhibit, with the products on display and the representatives present, were as follows:

Exhibiting Members

American Car & Foundry Co., New York; automatic electric steel-bar heater, one electrode electric heater; two electrode rivet heaters, and one electrode full automatic metal heater; W. J. Bisset, F. C. Cheston, H. C. Cheston and A. G. Wood.

American Fork & Hoe Co., Cleveland, Ohio; adzes, ditchbank blades, shovels, spades, scoops, axes, hammers, scythes, brush hooks and weed cutters; H. C. Branahl, C. C. Connolly, George L. Dunn, S. L. Henderson, A. Milligan, J. J. Nolan, F. J. Reagan, John Skeel and R. J. Whelan.

Barco Manufacturing Co., Chicago; gasoline hammers, tie tampers, new light-weight tie tamper; F. N. Bard, W. I. Behlke, C. C. Cox, B. H. Ferguson, C. O. Jenista, W. T. Jones, L. J. Lytle, J. L. McLean, C. L. Mellor, and F. B. Nugent.

Buda Co., Harvey, Ill.; bridge jacks, track jacks, rail bender, car stops, track liners, bonding drill, track drill, inspection motor cars, electric crossing gate, tool grinder, gages, levels, tie puller, motor-car parts, Diesel engine, nozzle tester, light section motor car, tie nipper, car and journal jacks, locomotive jacks, general purpose jacks, bumping posts, wheels, axles and bearings; R. M. Blackburn, H. H. Cohenour, S. T. Comfort, J. S. Dempsey, R. B. Fisher, W. H. Haas, J. F. Hartley, L. Kerlin, R. K. Mangan, C. T. Miller, R. J. Mulroney, D. Richards, M. J. Rotroff, Wood Sanford, G. A. Secor, C. W. Smith, D. Steel, L. O. Stratton, R. Williamson and A. Wright.

Caterpillar Tractor Company, Peoria, Ill.; movies and literature on Diesel track-type tractors, Diesel engines, road machinery, scrapers, tractor mounted shovels, winches; L. C. Allenbrand, G. A. W. Bell, Jr., F. E. Blanchard, Robt. Culshaw, E. W. Cunningham, Lyle Hill, Gene Larson, B. C. Patten and Ralph Patten.

Chipman Chemical Co., Inc., Bound Brook, N. J.; literature on chemical weed destruction; Charles M. Bernuth, N. S. Leavitt, W. H. Moyer and I. J. Strain.

Crerar, Adams & Co., Chicago; literature on rust preventive, snow brooms, track liner, manila rope, handles for track tools, die starter, track and bonding drills, pipe wrenches, crayons, tools, track shovels, tool handles; R. Besant, C. W. Borneman, E. Dunlap, Geo. J. Doyle, W. Harris, Al. Kapola, A. MacBean, Irving Poehler, Hugh Stringham and J. M. Temple.

Cullen-Friestedt Co., Chicago; anti-slip rail tong, moving pictures of rail crane and clamshell and lifting magnet; W. C. Bamber, L. B. Bertaux, C. J. Bronez, E. V. Cullen, F. J. Cullen, F. P. Cullen, C. G. Edwards, T. G. Frazee, R. W. Jamison, F. L. Kendig, J. F. Leonard, G. G. Prest, W. J. Roehl and J. E. Simkins.

Dearborn Chemical Co., Chicago; water treating equipment, pumps, chemical, rust preventives, water testing equipment, chemical proportioning pumps, signal foammeter, process for corrosion prevention, cable coating equipment; D. B. Bishop, Don Bodishbaugh, L. D. Brown, G. R. Carr, R. A. Carr, Robert F. Carr, R. F. Carr, Jr., H. J. Connors, E. M. Converse, E. R. Glover, E. A. Goodnow, L. O. Gunderson, W. H. Hinsch, F. B. Horstmann, J. F. Johnson, S. C. Johnson, E. L. Konigsmark, Mark McBrian, R. J. Maginn, R. O. Milnes, A. C. Moeller, A. M. Novak, R. L. Oliver, C. C. Rausch, A. H. Reynolds and B. H. Stone.

DeSanno & Son, A. P., Inc., Phoenixville, Pa.; abrasive wheels and abrasive cutting machine literature; N. A. Conway, Jr., W. J. Lukey, L. G. Martin and E. J. Rohan.

Dickinson, Inc., Paul, Chicago; smoke jacks, chimneys for small buildings,

J. S. Hutchins
President

W. J. Hanna
Vice-President

C. H. White
Secretary

roof and deck drains, roof ventilators (full size and models), exhaust heads and wall scuppers; A. J. Filkins, E. M. Filkins and H. Knutson.

Duff-Norton Manufacturing Co., Pittsburgh, Pa.; track jacks, automatic lowering jacks, ball-bearing self-lowering jacks, standard speed jacks, air-motor-operated power jacks, sidelift track jack, journal jack, tie spacer, track lining jack, bell base screw jacks, bridge jack, tie puller; Robt. G. Allen, E. C. Gunther, D. F. Evans, Walter Floyd, J. Gilchrist, George Mayer, N. A. Sinclair and J. F. Van Nort.

Eaton Manufacturing Co. (Reliance Spring Washer Division), Massillon, Ohio; rail joint spring washers, rail bonding washers, locomotive spring washers; E. D. Cowlin, E. C. Gross, H. J. McGinn, R. L. Shireman and A. H. Weston.

Elastic Rail Spike Corp., New York; Muller utmost elastic spike; W. A. Fisher, A. C. Jack, B. Kuckuck, G. W. Muller and A. J. Reading.

Electric Tamper & Equipment Co., Ludington, Mich.; electric vibratory tampers, gas electric generator sets, step-cut spotting and full line of regular tamping blades, including skeletonizing blade; 1, 2, 4, 8, 12 tamper power units and literature; H. W. Cutshall, Wilbur Davis, J. F. Hensel, R. Herman, Corwill Jackson, L. S. Osborn and M. S. Westlund.

Fairbanks, Morse & Co., Chicago; inspection car, section car, sectionalized engine; R. D. Allen, W. F. Anderson, H. J. Barbour, K. E. Barrett, E. L. Benson, E. P. Chase, E. J. Coverdale, J. F. Cruikshank, W. C. Dehn, T. W. Drennan, C. T. Fugitt, E. C. Golladay, H. E. Hillary, R. F. Lane, D. K. Lee, J. M. McCarthy, C. G. Mahana, L. F. Munson, W. L. Nies, C. B. O'Neil, R. W. Perry, C. A. Rauch, C. E. Reed, C. R. Turner, C. Van Natta and C. H. Wilson.

Fairmont Railway Motors, Inc., Fairmont, Minn.; ballast drainage car, gang cars, standard section cars, inspection cars, light section cars, bridge and building cars, heavy duty cars, weed mowers, motor car accessories and weed burner car; George Adams, C. P. Benning, C. W. Brhel, W. D. Brooks, K. K. Cavins, C. J. Dammann, W. G. Day, A. R. Fletcher, C. H. Johnson, W. F. Kasper, R. H. McCune, J. T. McMahon, V. Padgett, R. W. Payne, C. L. Rager, W. H. Ripken, H. A. Sly, L. D. Whitaker and W. M. Williamson.

Fansteel Metallurgical Corporation, North Chicago, Ill.; Balkite and Selenium rectifiers; R. B. Arnold, C. G. Howard, C. E. Murphy, A. Percy, G. Ramsey, J. Schaefer.

Hayes Track Appliance Co., Richmond, Ind.

Hogan, George M., & Co., Chicago; right-of-way tractor mowing machine, one-man track tool; V. G. Cartier, J. T. Flynn, K. E. Gifford, G. M. Hogan, G. M. Hogan, Jr., J. E. Hogan, A. Lemke, A. F. McCoole, D. L. O'Brien and S. H. Smith.

Hubbard & Co., Pittsburgh, Pa.; carbon and alloy steel, track tools, super service alloy, spring washers and anti-creepers; William Joyce, J. F. W. Kruse, L. J. Wenzel and John Wincrantz.

Industrial Brownhoist Corp., Bay City, Mich.

Johns-Manville Sales Corp., New York; roofing, transite pipe, pipe insulation, insulating board, asphalt tile flooring, soft mechanical packing, asbestos roofing shingles, asbestos siding shingles, Flexboard, flat and corrugated transite, transite smoke jack, rock wool insulation batts; P. R. Austin, J. D. Baker, C. E. Bryant, Jr., C. S. Clingman, Elliot Fairback, J. I. Farrell, S. H. Flannagan, R. J. Offutt, Thomas O'Leary, Jr., C. M. Patten, A. C. Pickett, H. R. Poulson, W. W. Prosser, P. E. Redding, R. P. Townsend, J. H. Trent, F. C. Vandervort and L. T. Youhn.

Jordan, O. F., Co., East Chicago, Ind.; model of Jordan spreader, photos of Jordan spreader; A. W. Banton, J. C. Forbes, H. M. McFarlane, W. J. Riley and C. W. Shipley.

Joyce-Cridland Company, Dayton, Ohio; automatic lowering jacks, geared ratchet lever jacks, single and double acting brake jacks, plain lever jacks, self-lowering jacks, geared screwed jacks, journal jacks, locomotive screw jacks; R. E. Bell, Huston Brown, Kert Hott, C. N. Thulin, E. E. Thulin and R. J. Ward.

Kalamazoo Railway Supply Co., Kalamazoo, Mich.; pressed steel and wood center motor car wheels, track gages, track levels and photographs of ballast discer cars, enclosed inspection car; G. E. Bridge, L. Boswell, C. W. Croasdill, R. E. Keller, F. E. McAllister, R. J. McAllister, E. C. Poehler, P. J. Robischung and K. B. Sylvester.

Lehon Co., Chicago; prepared roofing, asphalt shingles, cold process roofing, roof coatings; C. E. Croisant, John Eipper, Tom Lehon, E. A. Leonard, R. J. Mulroney, A. C. Senseney, J. W. Shoop and H. A. Wolfe.

Lundie Engineering Corp., New York; tie plates, spring clip, tie tongs, rail lubricator; L. B. Armstrong, W. B. Joyce, Chas. W. Stone and O. W. Youngquist.

Magnaflux Corporation, Chicago; Magnaflux testing equipment and samples of defective parts; R. N. Baughman, Taber de Forest, D. R. Dunn, J. E. McMahon, Jr., R. A. Rarick and W. E. Thomas.

Maintenance Equipment Co., Chicago; rail and flange lubricators, switch-point protector, literature on blue-flag derail, pictures of three-man rail layers; S. E. Bates, E. Overmier, T. E. Rodman, P. A. Wells, Jr., and P. A. Wolff.

Mall Tool Co., Chicago; 1-hp. gasoline rail and signal bond grinder, 6-hp. combination rail grinder, cross-slotting, surface grinding, switchpoint and stock rail grinding attachments, gasoline, pneumatic and electric vibrators, gasoline, pneumatic and electric chain saws, portable electric saws and drills; R. F. Burgwald, S. Gromnicki, F. A. McGonigle, A. W. Mall and M. Rehnquist.

Metal & Thermit Corp., New York; welding electrodes, Thermit pressure welding equipment for rail joints, pressure and compromise weld joints; F. J. Knapp, Jr., Anton Lucas, J. B. Tinnon, H. T. Thompson, L. G. Vock and C. D. Young.

Monroe, B. C., Tuscola, Ill.; Monroe poundless railroad crossing and lift rails; B. C. Monroe.

Morden Frog & Crossing Works, Chicago; adjustable rail brace, switch accessories, guard rail, split switch; E. C. Argust, R. A. Brown, T. F. Carlin, F. W. Carter, W. I. Church, W. Homer Hartz, Chas. Kane, G. F. Killmer, Lyle Martin, C. E. Murphy, J. B. Peddle and L. C. Reebs.

Morrison Railway Supply Corp., Buffalo, N. Y.; wood preservative, grinding wheels, welding rods, switch point guard, literature on welding service; G. J. Diver, R. L. Morrison, E. Smith and D. R. Vogel.

Moto-Mower Company, Chicago; power driven mowers and literature; E. R. Mason, L. C. Meskimen, Mrs. L. C. Meskimen and J. O. Spottswood.

Murdock Mfg. & Supply Co., Cincinnati, Ohio; water service boxes, hydrants, washers, O.O.C. air and hot and cold water valves and drinking fountains; Thos E. Bart, John G. Murdock and Robt. J. Murdock.

National Aluminate Corp. of Chicago; chemical proportioning pump, new type of sensitive flow switch, phototester for rapid analysis of water using principle of the electric eye, embrittlement testing apparatus, unit chemical vat with all proportioning and electrical control equipment integral, sectional chemical proportioner pump, waterlab cabinet, continuous blow-down equipment for locomotive boilers, literature, photographs, samples of corrosion and incrustation in pipe; W. R. Anthony, C. M. Bardwell, R. A. Bardwell, B. D. Barger, R. G. Bielenberg, C. A. Brown, J. L. Callahan, P. H. Coleman, L. E. Elliott, P. W. Evans, R. E. Falkinburg, C. B. Flint, J. L. Gibboney, R. V. Lucas, L. L. Lux, H. A. Marshall, V. E. McCoy, A. F. McNeil, E. M. Miller, H. H. Richardson, D. R. Ryznar, H. D. Shaw, T. G. Windes and E. L. E. Zahn.

National Lock Washer Co., Newark, N. J.; ferrule wedges for track tool handles, spring washers; F. B. Archibald, T. C. Coleman, Jr., E. Harbeck, C. H. Loutrel, W. H. Reaves and G. E. Webster.

Nichols Engineering Company, Chicago; turntable tractor and controller, roller bearing drive trucks; B. F. Goldman, S. F. Nichols, S. H. Nichols and G. M. Shearer.

Nordberg Manufacturing Co., Milwaukee, Wis.; surface grinder, utility grinder and accessories, lag-screw driver, track drill, adzing machine, power jack, spike puller, power track wrench, frog and crossing grinder, precision grinder; L. P. Brassy, W. E. Bugbee, C. P. Clemens, W. W. Fitzpatrick, C. K. Jensch, Eugene Larson, R. W. Payne, F. M. Read, Will Reaves, S. H. Smith, H. H. Talboys, Halwin Wegner and F. S. Wonham.

Northwestern Motor Company, Eau Claire, Wis.; M. W. Allen, F. W. Anderson, Otis B. Duncan, G. W. Heithaus, W. B. Joyce, C. E. Murphy, A. H. Nelson, G. G. Prest, and W. J. Roehl.

Oxweld Railroad Service Co., Chicago; pictures of pressure butt-welding

and end hardening of rail, welding equipment; Lem Adams, M. C. Beymer, G. P. Bogert, M. Burnett, Jr., W. E. Campbell, E. Cordeal, R. J. Dodds, F. J. Duffie, F. Finsthwait, H. V. Gigandet, E. B. Hall, Jr., F. C. Hasse, H. E. Hoffman, J. L. Hoffman, W. A. Hogan, S. B. Hopkins, P. Hunter, Jr., May Kinney, Wm. Matthes, G. B. Moynahan, D. H. Pittman, J. H. Rodger, L. C. Ryan, H. W. Schulze, J. C. Stephenson, R. W. Torbert and J. E. Winslow.

P. & M. Co., Chicago; rail anchors, pictures of Fair rail anchor installation; S. M. Clancey, J. J. Gallagher, D. T. Hallberg, G. E. Johnson, J. E. Mahoney, W. A. Maxwell, G. E. Olson, R. W. Payne, F. A. Preston, W. H. Reaves and M. K. Ruppert.

Pettibone Mulliken Corporation, Chicago; Mechanical switchman; W. F. Britski, W. A. Enstrom, A. R. Hearl, C. A. Johnson, C. F. Landberg, E. J. Seifert and G. J. Slibeck.

Philadelphia Steel & Wire Corp., Philadelphia, Pa.; display of spring washers; Waldo E. Bugbee, J. T. Flynn, Geo. M. Hogan, John E. Hogan, John M. Newkirk, R. E. Schatmeyer, Stanley H. Smith and C. C. Washer.

Pocket List of Railroad Officials, New York; copies of publication; Harold A. Brown and B. J. Wilson.

Power Ballaster Company, Chicago; photographs working model of cribbing machine, motion pictures, power track ballaster; W. E. Bugbee, Ralph Payne, F. H. Philbrick, L. L. Schreck, and Stanley Smith.

Rail Joint Co., New York; standard and insulated joints, armored insulated joint, alloy compromise joints, center-overfill joint, insulating fibre; Alex Chapman, E. A. Condit, W. E. Gadd, H. C. Hickey, H. L. Lansing, G. H. Larson, J. N. Meade, R. W. Payne, C. F. Reade, Thos. Ryan and E. F. Schermerhorn.

Railroad Accessories Corp., New York; power rail drill, power track machines for tightening and loosening nuts and setting screw spikes, micro cutout and tie boring machine; E. M. Deems, S. G. Ellis, B. A. Lundy and B. A. Lundy, Jr.

Rails Co., New Haven, Conn.; compression screw spikes, compression spring rail spike, compression-type rail fastenings, M. & L. plate assembly, full-throated cut spikes, oil snow melters, literature on rail, flange and curve lubricator, crossing flangeway bracket and examples of strip welding; R. E. Bell, L. T. Burwell, Milburn Moore, W. A. Peck and J. V. Westcott.

Railway Age—Railway Engineering and Maintenance—Railway Engineering and Maintenance Cyclopedia, New York; copies of publications; Geo. E. Boyd, C. M. Burpee, M. H. Dick, S. W. Hickey, Neal D. Howard, Elmer T. Howson, P. D. Juraschek, F. C. Koch, Henry Lee, J. G. Little, H. E. McCandless, H. H. Melville, C. W. Merriken, H. A. Morrison, Charles Packard, Maurice Peacock, F. H. Thompson and J. S. Vreeland.

Railway Maintenance Corporation, Pittsburgh, Pa.; rail joint packing; R. B. Baker, J. F. Casey, Jr., J. E. Mountford and J. B. McWilliams.

Railway Purchases and Stores, Chicago; copies of publication; J. P. Murphy, Jr., K. F. Sherran and Ed. Wray.

Railway Track-work Co., Philadelphia, Pa.; literature and photographs on grinders; A. M. Nardini.

Ramapo Ajax Div. (American Brake Shoe & Foundry Co.), New York; safety switch stands, rigid switch stands, rail lubricator, literature on manganese crossings, Samson switch with improved fittings, switch point locks; T. E. Akers, G. A. Carlson, G. M. Cooper, C. P. Corrigan, J. E. Davidson, R. E. Einstein, R. M. Evans, C. Godfrey, R. M. Helms, A. F. Hess, D. F. Hilton, J. V. Houston, A. F. Huber, J. S. Hutchins, J. P. Kleinkort, R. P. McClave, W. Muller, E. F. Needham, R. W. Payne, H. W. Renick and J. B. Spencer.

Republic Steel Corp., Cleveland, Ohio; literature and pictures of general steel products and railway supplies; A. J. Brant, J. R. Fraine, A. Foukal, W. H. Hanna, W. E. Lambert, H. L. Miller, W. T. O'Neill, H. P. Pickering, A. J. Roof, R. J. Schuler, Frank Schumacher and L. L. Solger.

Rust-Oleum Paint Corporation, Chicago; pictures of Rust-Oleum application on bridges, signal boxes and cars, practical demonstration of Rust-Oleum and rust prevention, samples of paint; J. R. Borin, T. W. Harper, C. N. Johnson, A. L. B. La Camp and J. C. Simmons.

Snow, T. W. Construction Company, Chicago; B. S. Snow.

Sperry Products, Inc., Hoboken, N. J.; display of rail defects including transverse fissures and engine burn fractures, originating from driver burns on rail surface and from thermal cracked metal under burns repaired by welding, sample of electric flash butt weld; E. A. Crawford, C. W. Gennet, Jr., S. R. Lewis, W. P. Morrison and S. P. Murphy.

Stanley Electric Tool Division—The Stanley Works, New Britain, Conn.; portable electric drills, saws, hammers, nut-runners, sanders, and Unishears; E. C. Koenig, A. J. Peterson, P. C. Platt, and L. R. Warnock.

Teleweld, Inc., Chicago; joint shims, samples of welded joints, heat-treated joints, Brinnell-hardness tester, propane heater for rail end welding; T. L. Borman, C. E. Buck, G. A. Greene, John E. Hogan, C. W. McKee, H. E. McKee, E. J. Payton, J. A. Roche and Stanley H. Smith.

Templeton, Kenly & Co., Chicago; rail pullers and expanders, tie spacer, track jacks, push and pull jacks, bridge jacks, ball-bearing screw jacks, journal jacks; W. C. Cornu, H. C. Dilsizian, R. B. Hill, Fred Kimmel, W. H. Kreer, P. H. McManus, N. L. Montgomery, William Simpson and J. B. Templeton.

Timber Engineering Co., Washington, D. C.; timber connectors, split rings, toothed rings, flanged shear plates, claw plates, spiked rids and clamping plates for bridge and building construction, termite shields; J. B. Jordan and L. P. Keith.

U. S. Wind Engine & Pump Co., Batavia, Ill.; water-column, valves, riser pipe frost-proofing, switch stands, float valves and electric pump jacks; H. Beem, A. W. Swanson and C. E. Ward.

Woodings-Verona Tool Works, Verona, Pa.; Triflex spring rail anchors; A. C. Laessig, R. J. McComb, G. L. McKewin, J. M. Moore, Milburn Moore, E. Woodings and W. H. Woodings.

Woolery Machine Co., Minneapolis, Minn.; rail joint oiler, display of power tie cutting machine and creosote sprayer; A. J. Franke, W. A. Peck and H. E. Woolery.

Young & Greenawalt, Chicago; drainage literature, photographs of installations of culvert pipe (plain or asphalt-coated), reinforced paved invert, subdrainage pipe, perforated pipe, sectional plate and heavy-duty plate; W. P. Greenawalt, W. J. Kelley, C. E. Kitchin, E. A. Law, S. Schar, P. J. Spears, Jos. Wysong and J. L. Young.

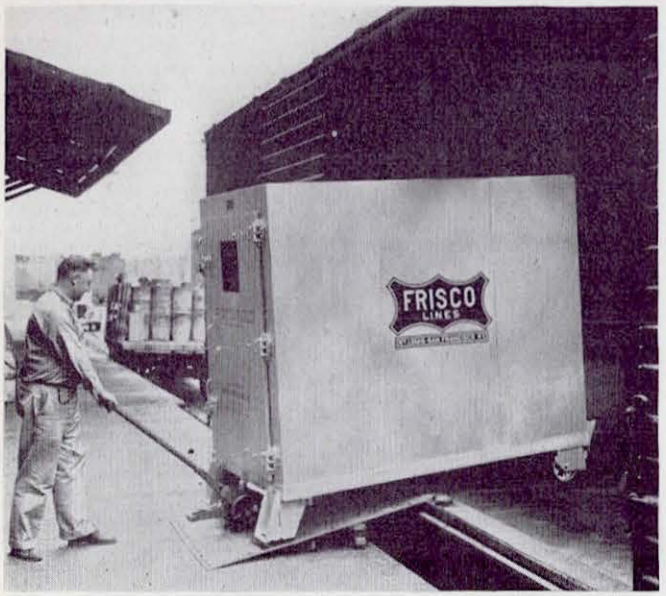
* * * *

Station For Railroad, Pa.

Station for Railroad (Pa.) Post Office is Shrewsbury, 36 mi. south of Harrisburg on the Pennsylvania's Northern Central. "Railroad" is believed to be the only town so named in the country. It does not appear in the "Official Guide" but "Railway Park", on the Reading, does.

Frisco Uses Portable Refrigerator Containers

Portable refrigerator containers, designed to use crushed ice and salt as a refrigerant, were first placed in operation by the St. Louis-San Francisco in 1935. These containers supplemented by insulated canvas bags for very small shipments, have proved so successful that at the present time the railroad owns 100 of them, each



Frisco Railroad

The Containers Are Designed for the Use of Crushed Ice, with Salt a Refrigerant

with a loading capacity of 95 to 100 cu. ft. During November, 1941, the road operated 447 schedules for the containers. Such diverse products as fresh meat, packing house products, candy, fruit and vegetables, fern leaves, yeast, dairy products and fresh fish are handled consistently. The ice tank is constructed of welded steel and placed in the rear inside of the container. It is serviced through a hatch in the roof.

The containers are covered outside and lined inside with steel and galvanized iron, with a wood frame and 4 in. of fibreglass insulation between. The underframe is of heavy angle iron, and is equipped with four roller-bearing wheels. By means of a lift jack, containers are easily moved over platforms and ramps and into and out of cars. When placed in cars, they are firmly anchored to the floor by means of devices which are built into the under-carriage.

Perfect Shipping Month

(Continued from page 585)

The shipper pledges "his utmost effort to protect American production by the exercise of unremitting care and the proper packaging, packing, marking and loading of merchandise of every nature and in every way guard against damage, loss or waste of materials, products, time and energy, and other national resources." The consignee pledges "to handle goods carefully, avoid damage in unpacking, report to shipper any damage that can be prevented by better packing or safer loading and to release cars promptly so there will be enough cars for all."

Engineering Officers Study Demands of War Traffic

(Continued from page 614)

cations, explaining that they would be offered for inclusion in the Manual at a later date. These specifications do not give recognition to the specifications for concrete placed under water that were adopted last year, or to the specifications for portland cement that were presented this year under Revision of Manual, but the committee said that they would be consolidated with these subsidiary specifications in due time.

Specifications for Test Borings

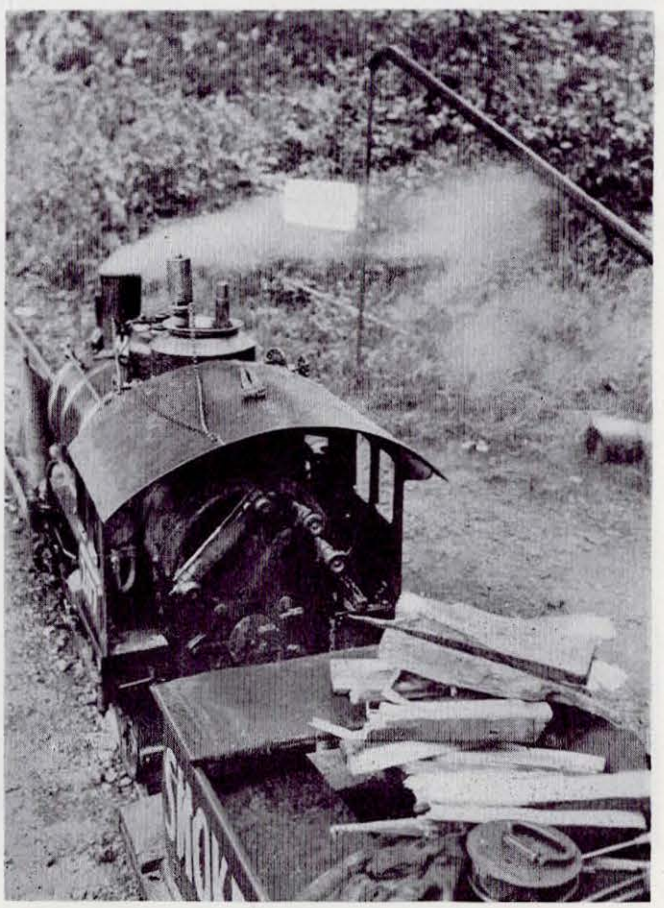
Last year the committee submitted as information a set of specifications for making test borings, together with a table of methods of making underground explorations and samplings and a sample page of test boring data. This year the committee recommended that all this material be adopted for publication in the Manual.

This recommendation was approved.

Report on Clearances

In a brief oral report A. R. Wilson, engineer of bridges and buildings of the Pennsylvania, and chairman of the committee, advised that the Car Construction Committee of the Mechanical division of the A. A. R. is working on a standard A. A. R. box car, the outline of which has been submitted to the committee on clearances for the purpose of developing how widely such a car can be used in interchange service without serious restrictions. He reported that the committee is now studying clearance information in this regard received from the railways.

* * *



This Miniature American-Type Locomotive Is *the* Motive Power of a Common Carrier "Amusement" Line Near Hartford, Conn.

NEWS

Curtail Passes Eastman Urges

Easing up on conventions and off-season vacations among travel economy ideas

Although "no general rationing of rail or bus passenger tickets is contemplated for the immediate future," Director Joseph B. Eastman of the Office of Defense Transportation in a March 15 statement nevertheless warned that the mounting demands upon passenger transportation facilities will make "travel as usual" more and more difficult during the coming months. Mr. Eastman suggested that unnecessary travel should be restricted by voluntary action on the part of the public; and he revealed that he had written a letter to J. J. Pelley, president of the Association of American Railroads, asking the railroads "to cooperate in conserving passenger space by tightening up restrictions on the issuance of passes and to take steps to insure that existing passenger-carrying equipment is used at full efficiency."

"Voluntary restrictions on travel may serve to postpone the need for more drastic measures which might be taken if facilities become overtaxed," Mr. Eastman said. Among other suggestions made by the ODT director were the staggering of vacations throughout the year; the taking of vacations at places close to home; and consultation by convention organizers and managers with rail and bus officers well in advance of the planned convention dates. In the latter connection Mr. Eastman said: "It may be necessary in the future to restrict large-scale civilian passenger movements at certain periods or in certain areas. Accordingly, the dates and places of convention meetings already scheduled may have to be changed. Some of these gatherings may have to be postponed indefinitely."

Earlier in his statement Mr. Eastman had set forth the problem as follows: "A heavy increase in passenger traffic on railroads and motor bus lines is to be expected in future months. Military movements will account for a substantial share of this increased traffic. Passenger carriers will be called upon to provide greatly expanded services for the transportation of military personnel. Trains and buses will be needed to move troops to camps, military posts, and embarkation points, and to carry men to and from home on leave.

"At the same time, civilian passenger traffic is certain to reach much higher levels than those of recent years. The fact that more people are employed, and at higher wages, will bring an increase in both business and pleasure travel. Another and probably more important cause of the upswing in traffic will be an unprecedented shift from private automobiles to common carriers. Leon Henderson's frank appraisal of the rubber situation makes it clear that such a shift is to be expected as tires wear out and cars are laid up. As a result, many new rail and bus commutation services will be needed.

"In the face of mounting demands for service, the carriers will find it difficult to obtain new passenger-carrying equipment, in view of the demands of war production. What these factors add up to is that railroads and bus lines probably will be unable to meet all demands for civilian passenger service in coming months. This means that 'travel as usual' will no longer be possible, just as it has proved impossible in other warring nations."

Joyce Made Chief of Plant Protection

Patrick Joyce, president of the Chicago Great Western, has been appointed chief of industrial plant protection for the Chicago area. The area includes more than 1,500 plants from Gary, Ind., to Waukegan, Ill.

Representation of Employees

Reporting on results of a recent election on the Richmond, Fredericksburg & Potomac, the National Mediation Board has certified the Order of Railway Conductors as the representative of road trainmen. In a recent election on the Kansas City Southern, the American Train Dispatchers Association won the right to represent train dispatchers.

Interior's Coal Division Will Aid OPA on Bituminous Prices

Arrangements through which the Bituminous Coal Division of the Department of the Interior and the Office of Price Administration will cooperate "in taking whatever steps are necessary to prevent wartime inflationary prices" for bituminous coal have been made by Secretary of Interior Ickes and OPA Administrator Henderson. The arrangements were worked out under that section of the price-control law which authorizes OPA to utilize the services of other federal agencies.

The Bituminous Coal Division will arrange any necessary hearings, conferences, correspondence, etc., and will recommend to OPA any bituminous price-control action it deems necessary.

Unions Insist on Finance Secrecy

Object to reporting receipts and outlays as business firms are required to do

Organized railroad labor together with the American Federation of Labor and the Congress of Industrial Organizations (C. I. O.) last week presented a solid front in opposition to H. R. 6444, the bill introduced by Representative Vinson, Democrat of Georgia and chairman of the House naval affairs committee, to increase the legal liabilities of labor organizations and trade associations by forcing them to register with the Secretary of Commerce. Hearings on the bill were held before a House judiciary subcommittee.

The bill, details of which were given in the *Railway Age* of January 31, page 307, provides, among other things, that all labor organizations and all trade associations shall be required to file with the Secretary of Commerce the names, addresses, compensation, and terms of office of the president, vice-president, secretary, treasurer, and other principal officers, and the directors, trustees, or members of the governing bodies. Also, such organizations would have to file financial information showing in detail the assets and liabilities of the registrant as of the close of its preceding fiscal year, its receipts and expenditures during such fiscal year, and such other information as the Secretary of Commerce may require.

The bill is an outgrowth of the recent report on the progress of the war effort by the House naval affairs committee under the chairmanship of Mr. Vinson, which recommended such legislation after commenting on what it called the "tremendous financial gains made by labor organizations during the period of the defense effort and the vast amount of funds and assets in their treasuries."

Appearing before the committee in opposition to the measure on behalf of railroad labor were J. G. Luhrsen, executive secretary of the Railway Labor Executives Association; W. D. Johnston, vice-president of the Order of Railway Conductors; James A. McBride, legislative representative of the Brotherhood of Locomotive Firemen & Enginemen; John T. Corbett, national legislative representative and assistant grand chief engineer of the Brotherhood of Locomotive Engineers; and Martin H. Miller, national legislative representative of the Brotherhood of Railroad Trainmen. Also testifying against the bill were

Paul Scharrenburg, legislative representative of the A. F. of L.; James B. Carey, secretary of the C. I. O.; Roland Jones, Jr., counsel for the National Association of Retail Druggists; and John W. O'Leary, chairman of the executive committee of the Chamber of Commerce of the United States.

Mr. Luhrsen characterized the bill as "unnecessary, harmful, and destructive to the morale of labor" and a "stigma on labor's general character." He also referred to it as an "asinine request" and went on to tell the subcommittee that the bill shows a "complete lack of understanding of the aims of labor organizations." "It is a meddling bill," he declared, "and emanates from those who have shown a dislike for labor." Finally, Mr. Luhrsen contended that if the need were shown for the registration of labor unions, that registration should be with the Department of Labor and not with the Department of Commerce as provided for in the bill.

It was Mr. Johnston's belief that "no real good can come from legislation of this kind" and that its passage would "result in discord and dissension and place the stamp of suspicion and distrust on labor organizations." "The time," he went on, "is inopportune to do anything that might disturb the peace and harmony that now prevails in most of the ranks of labor."

Mr. Johnston wanted the subcommittee to know that the O. R. C. had entered the labor union field "with clean hands and is still clean." He also declared that his group had nothing to hide and that it was proud of its insurance fund which has paid out some $55,000,000 since its inception. Explaining the subject of dues, Mr. Johnston asserted that his organization collects only one dollar per month per member for the support of the Grand Division headquarters. Ht also said that the Brotherhood publishes regular financial reports which are not only available to its members but also to anyone else that is interested; and it feels that there is no need for enactment of legislation similar to the Vinson bill. "We don't want our reports kicked around like a football," he concluded.

Mr. McBride read into the record a letter from D. B. Robertson, president of the B. of L. F. & E. to Representative Cannon, Democrat of Missouri, in which the union chieftain defended his organization against Vinson-report statements to the effect that the B. of L. F. & E. had made large financial gains during the defense effort and had some $25,000,000 in its treasury. The letter had previously been placed in the Congressional Record by Mr. Cannon and was noted in the *Railway Age* of January 31, page 307.

Mr. Corbett denounced the bill as a "move towards a final dictatorship" and said that the measure made it appear that the government was suspicious of the labor movement. Also, Mr. Corbett found many parts of the bill "ambiguous" and open to the criticism that it could be loosely construed to the detriment of labor. He prefaced his remarks by declaring that "there are no better citizens than engineers."

Mr. Miller read to the subcommittee a letter from A. F. Whitney, president of the B. of R. T., in which the latter denounced the bill as an attack on labor which was being pushed by enemies of the labor movement. He urged the subcommittee to take no action on the measure.

Mr. Carey and Mr. Scharrenburg took positions similar to that taken by railroad labor, while Mr. Jones and Mr. O'Leary urged that trade associations and chambers of commerce be exempted from the bill on the ground that no need existed for their inclusion in the purview of the measure.

Ben Winchell Passes

Benjamin L. F. Winchell, old-time railroad executive and for the past two decades a leading figure in industry, died on March 16 at his winter home in Beverly Hills, Calif., in his 84th year.

Born at Palmyra, Mo., in 1858, Mr. Winchell was reared at Hannibal, Mo., where he attended grade and high school. He entered railway service in 1874 as a clerk, first in the office of the superintendent of machinery and later in the auditor's office, of the Hannibal and St. Joe (now Burlington). Thereafter he was chief clerk in the traffic department and, in 1879, became assistant general passenger agent for the Atchison & Nebraska (Burlington). From 1880 to 1895 he occupied the same post with constituent companies of the present Frisco and Santa Fe. He then became general passenger agent, first, of the Union Pacific, Denver & Gulf (U. P.) and, then, of the Frisco.

In 1898 Mr. Winchell was elected vice-president of the Colorado & Southern and thereafter returned to the Frisco as vice-president and general manager—subsequently assuming similar duties for the Rock Island and the C. & E. I. From 1904 to 1909 he was president of the Rock Island. He then became president and, later, receiver of the Frisco. From 1913 to 1918 he was director of traffic for the Union Pacific at Chicago. Under the Railroad Administration he was southern regional director at Atlanta.

Mr. Winchell went with the Pierce Oil Company as vice-president in 1920 and in 1922 was elected president of the Remington Typewriter Company. Since 1927 he has been chairman of Remington-Rand, Inc.

Accounting Classification Change

The Interstate Commerce Commission has issued an order amending the classification of income, profit and loss, and general balance sheet accounts with respect to accounting for the amortization of discount on funded debt. Generally, the change which becomes effective January 1, 1943, will require that discount on debt be amortized over the life of the securities issued.

At present the railroads have the option of handling the amortization in the foregoing manner, or of charging the discount off to surplus at the time the securities involved are issued. Under the new rule, the latter may still be done if the total discount and expense applicable to any particular issue of securities does not exceed $25,000.

House Passes Retirement Acts Amendment

The House has passed and sent to the Senate H. R. 6387, a bill introduced by Representative Crosser, Democrat of Ohio, which would extend the crediting of military service under the Railroad Retirement Acts. The bill would provide for the crediting of military service subsequent to 1936. Military service in a war prior to January 1, 1937, is already creditable under the Retirement Act.

"Fan" Trip Scheduled on O. & W.

The New York, Ontario & Western will operate a one-day trip for railroad "fans" on Sunday, March 29, from New York to Cadosia, N. Y., and return. The train leaves Weehawken, N. J., at 8:25 a. m., arriving in Cadosia at 1:22 p. m., where the party will journey by bus to Hancock, N. Y. for dinner. Returning, the train leaves Cadosia at 3:52 p. m., arriving in Weehawken at 8:45 p. m. No cameras will be permitted.

Young Promoted to Brigadier General

Charles D. Young, who was recently called to active duty with the Army, has been promoted from the rank to Colonel to that of Brigadier General. His promotion was among several sent to the Senate last week by President Roosevelt and confirmed by the Senate on March 16. Brigadier General Young, a vice-president of the Pennsylvania, was serving as director of the Office of Defense Transportation's Section of Materials and Equipment, when he was called to active duty.

Pennsylvania-Reading Motor Lines Denied Bus Certificate

The Interstate Commerce Commission, Division 5, has denied the application of Pennsylvania-Reading Motor Lines, Inc., affiliate of the Pennsylvania-Reading Seashore Lines, for a certificate under the Motor Carrier Act's "grandfather" clause, covering common-carrier bus operations between Philadelphia, Pa., and Atlantic City, N. J. The adverse decision was based on the fact that the service involved has been operated by the Public Service Interstate Transportation Company under an arrangement entered in March, 1934.

"Viewing the agreement in its entirety," the commission said, "we are led to the conclusion that it represents a situation where an existing carrier with an established operation and well-located terminals decides to retire from the competitive carrier field and to grant the use of its terminal services to a competitor in exchange for the provision by the latter of service between those terminals by virtue of which applicant receives a commission on all tickets sold; other provisions of the agreement removed each from the competitive

field of the other. It is therefore clear that applicant is neither a motor carrier with respect to this operation, nor is there any reversionary interest in any certificate vested in it. As it is acting as agent for Public Service in the sale of tickets, it is not, insofar as the record indicates, a broker as defined in section 203(a)(18), with respect thereto."

Traffic Club of Washington, D. C. Annual Meeting

J. A. MacDonald, general agent for the Missouri Pacific Lines, was elected president of the Traffic Club of Washington, D. C., at the annual meeting held on March 11. Norris C. Reed, traffic manager for the Veterans' Administration, was elected first vice-president; C. A. Miller, general agent for the Chicago & North Western, was chosen second vice-president; and Rowland E. Dobbins, traffic auditor, U. S. Department of Agriculture, was reelected secretary-treasurer.

Milwaukee Offers Employees Ground for War Gardens

To provide ground for subsistence gardens, the Chicago, Milwaukee, St. Paul & Pacific will grant its former employees and part-time workers the free use of its property not needed for railroad or industrial purposes during the 1942 growing season. Members of the local chapters of the Milwaukee Road Women's club, will assist in organizing garden clubs and in some cases provide seeds and aid home-canning projects.

Club Meeting

The Transportation Club of Rochester, N. Y., will hold a forum meeting on March 25 at 8 p.m. at the Rochester Chamber of Commerce building. K. A. Borntrager, superintendent, New York Central, Rochester, will discuss "The Railroads in War" and C. H. Vayo, general traffic manager, Eastman Kodak Company, Rochester, will discuss "The Car Efficiency Committee Activity and I.C.C. Car Service Orders." "Railroadin'," a new motion picture in color and sound, will be shown. The club's "perfect shipping month" meeting will be held on April 14.

Conserve Meat by Handling Livestock Carefully

Conserve the nation's meat supply by handling livestock carefully, is the theme and subject of a pamphlet issued by the National Live Stock Loss Prevention Board, Chicago. Ten to thirteen million dollars annually is the cost of the death and crippling of animals in transit and from bruising in general, the pamphlet points out. Three-fourths of the total loss is from bruises which occur on farms, in transit, at public markets and to some degree, in packing plants. The greatest damage occurs in transit, particularly in poorly-equipped trucks operated by careless handlers.

The average loss on dead and crippled animals is more than twice as great in truck as in rail shipments, the brochure continues. The railroads have greatly reduced losses in transit by using better equipment and improved methods and are working toward still greater reductions. The pamphlet suggests a state license system, as a means of eliminating truckers who do not provide proper equipment, who rush loading operations, jam animals against sharp corners, crowd too many in, lose their tempers and club animals.

Economic Historians Invite R. R. Collaborators

The country's leading economic historians have organized a society, known as the Economic History Association, and are publishing a semi-annual periodical known as the Journal of Economic History. Organizers of the association are, for the most part, teachers of this subject in the country's leading educational institutions—but the scope of the society includes all persons interested in the field, and their co-operation is earnestly invited.

Railroad men are believed to include among their number more historians than is the case in any other American industry. Railroads are rich in history—hence the Economic History Association is hopeful that railroad people will participate in its activities—possibly contributing articles to its Journal or reviewing books for it.

Railroad historians who are interested may communicate with the editor of the Journal of Economic History—Professor E. A. J. Johnson, New York University, Washington Sq., New York.

New York Roads Ask "Clarification" of Passenger-Fare Order

Proceeding with their efforts to apply the Ex Parte 148 passenger-fare increase to their intrastate rates, the Long Island and the Staten Island Rapid Transit have asked the Interstate Commerce Commission to "clarify" its order in the proceeding.

The petitioners would have the "clarification" take the form of "expressly declaring that it was the purpose and intention of the commission . . . to require the applicants to increase their intrastate passenger fares, other than commutation, to conform to such increases in their interstate passenger fares as they might establish under said order."

ODT Will Assist in Arranging Local Delivery Pools

Advice and assistance will be given by the Office of Defense Transportation to local business enterprises seeking to readjust delivery services as a means of conserving trucks, tires, and other materials and equipment. The recent ODT announcement in this connection revealed that arrangements have been worked out whereby the local delivery pooling plans will be cleared with the Department of Justice "as to their legality under the antitrust laws."

The announcement therefore suggested that any arrangements evolved locally be submitted to ODT for consideration and approval. Pending the establishment of field offices by ODT, the proposed plans should be submitted in written form to Director John L. Rogers of the Division of Motor Transport, Washington, D. C. Accompanying the announcement was a joint statement by ODT and the Department of Justice. It outlines procedure for submission of the proposed plans to ODT and sets forth views of the Department of Justice as to the applicability of the anti-trust laws.

February Export Traffic

Cars of export freight other than grain or coal unloaded at Atlantic, Gulf and Pacific ports in February totaled 57,854 cars compared with 42,140 in February, 1941, according to the Association of American Railroads. Cars of grain for export unloaded in February this year at these ports totaled 2,134 cars, compared with 2,215 cars in the same month last year.

"Notwithstanding the fact that many boats have been taken from regular commercial steamship lines, there has been no congestion at the ports nor has there been any delay to traffic, due to the continued cooperation of all concerned, particularly the steamship lines, exporters and shippers," the A. A. R. said.

February Operating Revenues 27.6 Per Cent Above 1941

Preliminary reports from 89 Class I railroads, representing 82.5 per cent of total operating revenues, made public March 18 by the Association of American Railroads, show that those roads, in February, had estimated operating revenues amounting to $377,183,729, compared with $295,705,966 in the same month of 1941, or an increase of 27.6 per cent.

Freight revenues of the 87 Class I roads in February, amounted to $308,763,201 compared with $244,362,780 in February, 1941, or an increase of 26.4 per cent. Passenger revenues totaled $44,266,830, compared with $29,528,831 in February, 1941, or an increase of 49.8 per cent.

ODT Would Readjust Local Milk Delivery Services

The Office of Defense Transportation has requested management and labor engaged in the retail distribution of milk to cooperate with it in working out plans for readjustment of local delivery services to conserve tires and motor vehicle equipment. The request was made in letters sent by John L. Rogers, director of the ODT's Division of Motor Transport, to R. E. Little, executive secretary of the International Association of Milk Dealers, Chicago; Philip Murray, president of the Congress of Industrial Organization, and Daniel J. Tobin, president of the International Brotherhood of Teamsters, Chauffeurs and Helpers of America, Washington, D. C.

Mr. Rogers said that investigation by his staff disclosed that milk delivery equipment could be conserved by the following methods: (1) Establishment of every-other-day retail deliveries; (2) restriction of deliveries to daylight hours, beginning not earlier than 7 a. m., in order to eliminate "call-backs" to make collections or for

other purposes; (3) elimination of special deliveries, retail and wholesale; and (4) elimination of Sunday wholesale deliveries, except to hospitals and to the armed forces. Under the recently-announced arrangement between the Department of Justice and the ODT, pooling of deliveries, curtailment of services, or other action to readjust local delivery systems to meet the shortage of facilities will not be prosecuted under the anti-trust laws, if the action is taken in accordance with a plan approved by the ODT.

Allowance for Dunnage Used in Closed Cars

Allowances, conditioned upon loading in excess of carload minimum weights, will be made by the railroads for dunnage used in closed cars under a revision of Rule 30 of the Consolidated Freight Classification. The closed-cars phase of the revised rule provides for the dunnage allowance of actual weight, but not in excess of 250 lb., when the cars are loaded 25 per cent or more, but less than 50 per cent, above the minimum carload weight; when the loading is 50 per cent or more above the minimum, the dunnage allowance will be actual weight, but not in excess of 500 lb. No allowance will be made for dunnage used in connection with bulk freight in closed cars.

Trans-Missouri-Kansas Board to Meet March 25

The twentieth annual and sixty-second regular meeting of the Trans-Missouri-Kansas Shippers' Board will be held at Kansas City, Mo., on March 25. Emergency measures contemplated by the Interstate Commerce Commission, activities of the National Association of Shippers' Advisory Boards in the War Emergency, and the grain situation are among the subjects docketed for consideration. At a joint luncheon of the Board, the Kansas City Chamber of Commerce and the Kansas City Traffic Club, Joseph B. Eastman, director of the Office of Defense Transportation, will be the speaker. At a special grain meeting in the afternoon, Col. J. M. Johnson, of the Interstate Commerce Commission, and J. A. Wells, Jr., special assistant to the secretary of agriculture, will speak.

February Employment 13.48 Per Cent Above Last Year

Railroad employment increased one-hundredth of one per cent—from 1,168,706 to 1,168,795—during the one-month period from mid-January to mid-February, while the February total was 13.48 per cent above February, 1941, according to the Interstate Commerce Commission's latest compilation based on preliminary reports. The index number, based on the 1935-1939 monthly average as 100 and corrected for seasonal variation, was 119.1 for February as compared with January's 119.4 and February, 1941's 104.9.

February employment in all groups was above that of February, 1941, the increases being: Train and engine service, up 15.75 per cent; maintenance of equipment and stores, 15.38 per cent; professional, clerical and general, 12.80 per cent; maintenance of way and structures, 12.71 per cent; yardmasters, switch-tenders, and hostlers, 11.85 per cent; transportation, other than train, engine, and yard, 7.94 per cent; executives, officials, and staff assistants, 5.68 per cent. Meanwhile, February employment was slightly above the previous month in all groups save maintenance of way and structures, down 1.21 per cent; and transportation, other than train, engine, and yard, down 0.14 per cent.

Railroad Men Are in the Army

In the present serious emergency and because of the fact that military services are so dependent upon expeditious and safe handling of war materials and personnel, every railroad man should consider himself just as much in the military service as if he were in uniform. Such in substance is the message of a printed statement of W. M. Jeffers, president of the Union Pacific, which has been mailed to every officer and employee of the railroad. Further to emphasize this message, the Union Pacific has prepared colored posters, one of which is reproduced herewith, and is displaying them throughout the system.

"The situation as it is now rapidly developing," the statement reads, "is further emphasis of the fact that railroads and railroad men are the first line of defense. In the final analysis, the Union Pacific is the strategic route and will be called upon to take the brunt of whatever transportation burden is thrown upon the western lines. It is, therefore, the responsibility of we men in Union Pacific service to do this job and do it right, and I am confident that this organization will meet that challenge. I am, therefore, again appealing to men in our service, regardless of the department in which they are employed, to be always on the alert and to handle the job efficiently, expeditiously and safely. Above all things, it is important that no chances be taken. A derailment or an accident that will delay traffic on the Union Pacific in the present emergency is a major disaster."

UNION PACIFIC
"Daddy, ain't you got a uniform?"
"Yes, son, this is my uniform"
THE RAILROADS ARE THE FIRST LINE OF DEFENSE
"KEEP 'EM ROLLING"

The Poster, in Three Colors, Measures 13 in. x 20 in.

Status of Company Which Arranges for Water Transportation

Citing its decision in the Acme Fast Freight, Inc., case wherein it determined that freight forwarders were not carriers by motor vehicle, the Interstate Commerce Commission, Division 4, has found that a company which performs terminal pick-up and delivery services and arranges for line-haul movements with a boat line is not a common or contract carrier by water under the provisions of Part III of the Interstate Commerce Act. The decision in W-666 denies the application of F. C. Strickroot, doing business as Cadillac Cartage Company, Marine Division, for "grandfather" rights covering transportation by water between Cleveland, Ohio, and Detroit, Mich.

The commission's finding is without prejudice to any rights which the applicant may have as a wharfinger by reason of the operation of its dock at Detroit. The status of wharfingers under Part III is the subject of the pending Ex Parte No. 144 investigation.

McKellar Criticizes Government Travel Expenses

Speaking in the Senate on March 17, Senator McKellar, Democrat of Tennessee, criticized the executive departments of the government for the "utterly astounding" amount of money spent last year on travel. After pointing out that the legislative branch of the government had spent only $222,000 for travel last year, he went on to disclose that the total for the executive agencies was $147,896,385. The senator from Tennessee also told his colleagues that the government employees "are using up the space on our trains, using cars and tires, getting a per diem, while they are traveling de luxe all over the country."

Later in his speech, Senator McKellar noted that the Civilian Conservation Corps spent $11,770,000 for travel. "No wonder," he commented, "those who legitimately use the railroads could not obtain berths."

S. P. Shasta Line Change Placed in Service March 15

At 10 a. m. on March 15, the 30.1-mile, single-track Shasta line change of the Southern Pacific, on its San Francisco-Portland main line in northern California, was placed in service. The new line replaces 37 miles of circuitous route in the valley of the Sacramento river, between Redding and Delta, Calif., to provide a crossing of the reservoir to be impounded by the huge Shasta dam under construction by the Federal Bureau of Reclamation as a part of its Central Valley project.

The new line, work on which was begun in September, 1938, has been one of the most difficult and interesting pieces of railroad construction carried out in the United States in many years. Outstanding among its features are a total rise of 659 ft. to its crossing of the reservoir; 12 tunnels, with an aggregate length of 19,070 ft.; 8 major bridge structures, with a combined length

of 13,044 ft., including a double-deck, double-track railway-highway bridge, with an over-all length of 3,588 ft. and a height of 500 ft. above low water; and approximately 5,780,000 cu. yd. of grading in cuts up to 102 ft. deep on their center lines, and fills approaching 105 ft. in height. Descriptions of the line-change project and of its various special features appeared in issues of the *Railway Age* for June 22, 1940 and June 14, 21 and 28, 1941.

While the line as a whole was placed in service in March 15, northbound freight trains will continue to operate over the old line for several months. Furthermore, local service will be continued on that part of the old line between Redding and Coram, below the dam site, a distance of about 13 miles, for the construction period of the dam, and possibly much longer.

ODT Motor Transport Division Personnel is Announced

The organization of the Division of Motor Transport and appointments to top positions in the Division have been made public by Joseph B. Eastman, director of the office of Defense Transportation. Eight sections have been established within the Division, which is headed by Interstate Commerce Commissioner John L. Rogers.

The allocation and materials section, charged with the administration of the rationing program for trucks and other commercial vehicles and motor vehicle materials, in cooperation with the War Production Board, will be headed by H. H. Kelly, formerly chief of the section of safety of the Interstate Commerce Commission's Bureau of Motor Carriers.

The vehicle maintenance section, headed by William J. Cumming, who was formerly employed in the maintenance engineering department of the Surface Transportation Company, New York City, will deal with the administration of the motor vehicle maintenance program, including maintenance inspection of commercial vehicles in cooperation with inspection agencies of state governments.

The tire maintenance section, which will be in charge of the development of a program of preventive maintenance of tires and tubes, will be in charge of Robert D. Thomas, formerly district sales manager for the Firestone Tire & Rubber Company, with headquarters at Columbus, Ohio.

A petroleum carrier section under the direction of Sam F. Niness, formerly a vice-president of the Leaman Transportation Company, Downingtown, Pa., will coordinate the transportation of petroleum products by tank trucks to assure maximum efficiency in the utilization of equipment.

The coordination of intercity trucking operations and local cartage operations to bring about the maximum utilization of equipment will be carried out by the section of operations, property carriers, under the supervision of Edward J. Buhner of Louisville, Ky., who was president of the Silver Fleet Motor Express, Inc., and a partner in E. J. Buhner Company, distributor of petroleum products.

A section of operations, passenger carriers, whose duty it will be to coordinate the services of line-haul motor buses, is set up under the direction of Robert E. Maxwell, of Chicago, who was formerly treasurer of the Greyhound Corporation.

A farm vehicle section looking to the development of a program to bring about efficient utilization of far automotive equipment will be headed by Robert A. Hicks, who has held an executive position in an insurance firm at Cincinnati, Ohio, specializing in automotive equipment.

Lastly, there will be a local delivery section charged with the coordination of retail and consumer truck deliveries to conserve equipment through the elimination of duplication and overlapping. This section will be in charge of Edmund M. Brady, an attorney, who has been engaged in general transportation practice in Detroit, Mich.

The announcement goes on to point out that field offices are soon to be established by the Division of Motor Transport in cities throughout the country, and that the administration of the various motor vehicle programs undertaken by the Division will be highly decentralized.

904,000 Ton-Miles Per Minute

Railroads of the United States in 1941 moved an average of 904,000 tons of revenue freight one mile every minute in the year. In the month of October, the period of peak traffic, they moved 1,069,000 tons a mile every minute. This was shown by complete reports for the year just received from the individual railroads by the Bureau of Railway Economics, Association of American Railroads.

Railroads in 1941 moved 475 billion ton-miles. This was the heaviest volume of freight traffic ever handled by the railroads in any year. It exceeded by 6.2 per cent the previous record established in 1929, and was an increase of 27.3 per cent compared with 1940.

"This traffic," the A. A. R. said, "was handled without congestion or car shortage, moving smoothly and without delay. The record traffic in 1941 took place despite the fact that carloads of revenue freight were 20 per cent less than in 1929, and was due to a combination of heavier loading per car and longer haul per ton than in any previous year.

"While a forecast as to possible freight traffic in the current year is difficult owing to uncertainty as to the amount of war materials to be moved and the effect on non-defense industries of priorities and orders curtailing production, the railroads anticipate that the volume of freight traffic measured in ton-miles will be appreciably greater in 1942 than in 1941. If materials for construction of new freight cars and locomotives and for maintenance purposes can be obtained, the railroads are confident of their ability to continue to meet military and civilian transportation demands."

Freight Car Loading

Loadings of revenue freight for the week ended March 14 totaled 799,356 cars, the Association of American Railroads announced on March 19. This was an increase of 28,659 cars, or 3.7 per cent, above the preceding week an increase of 39,749 cars, or 5.2 per cent, above the corresponding week last year and an increase of 179,968 cars, or 29.1 per cent, above the comparable 1940 week.

As reported in last week's issue, loadings of revenue freight for the week ended March 7 totaled 770,697 cars, and the summary for that week compiled by the Car Service Division, A. A. R. follows:

Revenue Freight Car Loading

For Week Ended Saturday, March 7

District	1942	1941	1940
Eastern	162,861	168,753	137,790
Allegheny	172,275	167,998	127,911
Pocahontas	43,960	52,346	43,708
Southern	120,223	113,903	99,269
Northwestern	93,380	83,861	72,803
Central Western	116,454	103,960	93,210
Southwestern	61,544	51,796	45,905
Total Western Districts	271,378	239,617	211,918
Total All Roads	770,697	742,617	620,596
Commodities			
Grain and grain products	38,356	31,113	30,548
Live stock	10,689	9,914	10,972
Coal	145,373	158,936	123,286
Coke	13,764	14,119	8,962
Forest products	43,137	38,385	31,564
Ore	13,341	12,602	10,402
Merchandise l.c.l.	148,519	158,910	149,289
Miscellaneous	357,518	318,638	255,573
March 7	770,697	742,617	620,596
February 28	781,419	756,670	634,636
February 21	774,595	678,523	595,383
February 14	782,699	721,176	608,237
February 7	784,060	710,196	627,429
Cumulative Total, 10 Weeks	7,751,743	7,063,591	6,301,846

In Canada.—Loadings for the week ended March 7 totaled 62,137 cars, as compared with 63,553 cars for the previous week and 58,806 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
March 7, 1942	62,137	33,609
Feb. 28, 1942	63,553	32,729
Feb. 21, 1942	60,849	31,489
March 8, 1941	58,806	30,754
Cumulative Totals for Canada:		
March 7, 1942	607,252	312,971
March 8, 1941	528,602	270,634
March 9, 1940	472,928	240,679

A. A. R. Takes "Closer Look" at Potential St. Lawrence Traffic

Under the title "A Closer Look at the Potential Traffic Claimed for the St. Lawrence Route," the Association of American Railroads has issued a commentary on Part III of the St. Lawrence Survey published by the United States Department of Commerce. Part III of the Survey was entitled "Potential Traffic on the St. Lawrence Seaway."

The A. A. R. commentary points out how the Survey estimated as "not improbable" a potential freight movement on the St. Lawrence on 10,000,000 tons a year. Of this total, it adds, slightly less than half (4,600,000 to 4,750,000 tons) is specifically set out and discussed. An additional 2,029,000 tons "is picked up by reference to previous estimates by other parties;" and "the balance is a general blanket addition of 3,000,000 tons as an allowance for the future."

The estimates, says the A. A. R., "are exaggerated far beyond any reasonable possibility of attainment." It went on to point out that they are based on "potential" rather than "prospective" tonnage, "potential" tonnage including "all possible

traffic now moving, or that may move, in the territory under consideration." Also, the Survey "fails to recognize that factors other than rates affect the movement of traffic;" it erred in "many of the railroad rates and estimates of water rates used;" and it ignors the competition of existing inland waterways, and the commercial value of existing rail-water routes in the territory involved.

With respect to the 4,600,000 to 4,750,000 tons of "potential" traffic which the Survey set out by commodities, the A. A. R. commentary presents a detailed analysis of the estimate on each commodity.

Budd Urges Mid-Week Vacation Starts

Vacations beginning in mid-week are advocated by Ralph Budd, president of the Chicago, Burlington & Quincy, as an effective means of avoiding over-crowding on American railroads during the wartime emergency. Americans, over a period of years, have become great week-end travelers, according to Mr. Budd. It has become almost a national custom to start and close a vacation on Friday, Saturday or Sunday, resulting in a sharp traffic hump each week-end, he said. Added to this, commercial travel also is inclined to peak during this three-day period.

A check on passenger traffic in and out of Chicago during July and August, the two most popular months for vacations, reveals that there is 70 to 85 per cent more travel on the three week-end days—Friday, Saturday and Sunday—than on the other four days of the week combined. Heretofore, Mr. Budd said, the railroads have had the reserve equipment to furnish travelers almost any accommodations they desired, even during this week-end peak. However, he cautioned, a large part of the railroads' equipment, especially Pullman cars, now is required for military movements and it is further probable that, due to automobile and tire rationing, the railroads will be called upon to handle constantly increasing civilian passenger traffic.

Except where emergency requires it, Mr. Budd continued, the public should be encouraged, especially in vacation planning, to do its traveling on Mondays, Tuesdays, Wednesdays and Thursdays. Those who do will find trains less crowded and will experience little difficulty in obtaining the exact type of Pullman accommodations desired. Mr. Budd also recommended that serious thought be given by employers to spreading and staggering their vacation schedules. He suggested that special consideration be given to late spring and early fall vacations.

Supreme Court Asked to Review Reorganization Cases

The duties of the Interstate Commerce Commission in railroad reorganization cases under section 77 of the Bankruptcy Act may soon be explained by the United States Supreme Court if that tribunal grants a number of petitions now before it which seek review of three Court of Appeals decisions. The reorganization cases involved in the petitions now before the court are those of the Western Pacific, the Chicago, Milwaukee, St. Paul & Pacific, and the Chicago & North Western.

The Ninth Circuit Court and the Seventh Circuit Court, respectively, have refused to approve plans of reorganization for the Western Pacific and the Chicago, Milwaukee, St. Paul & Pacific on the ground that the commission had not made complete findings relative to questions of values and equities so that the reviewing court could definitely see in the new plan that provision for full compensation under the rule of the Consolidated Rock Products Company case (312 U. S. 510), had been made. The courts, in both instances, sent the cases back to the commission for the proper findings. In a third case before the Supreme Court, that of the Chicago & North Western reorganization, the Seventh Circuit Court upheld the determination of the commission where two-thirds of the creditors had approved the plan.

The Supreme Court also has before it the question of whether or not it will review a decision of the United States Court of Appeals for the District of Columbia which held that the findings of the National Railroad Adjustment Board are not subject to judicial review by the federal district courts or circuit courts of appeals, details of which were set out in the *Railway Age* of November 22, 1941, page 888. The petition seeking review was filed by John Dickinson, general counsel of the Pennsylvania, on behalf of the Washington Terminal Company, owner of the Washington, D. C., union passenger station. The case had been brought by the terminal company against certain of its employees in an attempt to test the Adjustment Board's power to interpret so-called "feather bed rules."

Mexican Railway Employees Stage Sit-Down Strike

In an effort to force the National Railways of Mexico to grant all union employees a 35 per cent increase in pay, the union called a *paro* (stop) for one hour, from 11 a. m. to 12 o'clock noon, on February 27 during which period no work was done. Under the union's plan, a *paro* will be called each Friday and the duration of the *paro* will be increased one hour each week. Three sections of the union on the lines south of Vera Cruz, however, departed from this plan and decided to hold a five-hour *paro* each day.

The controversy dates back three months when the union demanded a 35 per cent increase in pay for 70 per cent of all railway employees because of the higher cost of living. After negotiations, the railroad on February 26 granted a 10 per cent increase, effective March 1 to employees earning less than 180 pesos ($38) a month. The union refused to accept the 10 per cent increase and called the *paro*. It was reported at the time of the first *paro* that the union would be satisfied if the railroad would extend the 10 per cent increase to all union workers. However, when the government issued an edict baning *paros*, it was felt that it might force the railroad to grant the 35 per cent increase demanded.

The demands for increased pay were timed to coincide with improved traffic conditions. The 10 per cent increase granted by the railroad amounts to 7,000,000 pesos or 8 per cent of the present total annual payroll of 90,000,000 pesos. However, improved business conditions and prospects for rate increases which will increase the net 30,000,000 pesos have inspired the union to seek a larger amount.

Since the government took the management of the railroads away from the employees a year ago, the financial results have shown material improvement. During the first 11 months of 1941, railway earnings amounted to 20,153,966 pesos compared with 14,762,230 pesos in the same period of 1940 and the "net operating" earnings increased from 20,153,966 pesos to 24,347,911 pesos. The income and expenses for these two periods follows:

	First 11 mo. 1941 pesos	First 11 mo. 1940 pesos
Gross operating revenues	155,439,585	145,835,994
Other revenues	2,798,996	3,147,968
	158,238,581	148,983,962
Operating expenses	131,091,674	127,826,248
Rental of equipment, taxes, etc.	6,992,940	6,395,483
	138,084,614	134,221,731
Railway earnings	20,153,966	14,762,230
Net operating earnings (gross operating revenue minus operating expenses)	24,347,911	20,153,966

All Efficiency Records Shattered in 1941, Says Pelley

"American railroads shattered all previous efficiency records and set up new ones in moving the unprecedented freight traffic of the country in 1941," according to complete reports for that year, J. J. Pelley, president of the Association of American Railroads, announced March 17. As summarized by Mr. Pelley, the outstanding operating performance of the railroads in 1941 follows:

1. The average amount of freight carried per train was greater than ever before on record.
2. Those trains were moved over the road nearly 1½ times as fast as twenty years ago.
3. Freight train performance per hour was approximately twice as good as in 1921.
4. Greater utilization was obtained from freight car ownership than ever before.
5. Number of freight cars in need of repair was lowest on record.
6. Average daily mileage freight locomotives were operated attained new high mark.
7. Average daily movement of serviceable freight cars highest ever attained.
8. Average load per car was greater than ever before.
9. Fuel efficiency in freight service was the highest on record.

"Outstanding in railroad performance," Mr. Pelley went on, "was the increase in the amount of freight that was carried per train, that average in 1941 having been 915 tons, or an increase of 41 per cent compared with 1921. In 1940 the average was 849 tons and in 1929, the year of heaviest traffic in the history of the railroads, it was 804 tons.

"Freight train performance in 1941 was approximately twice that of twenty years ago. That is, gross ton-miles per train

hour increased from 16,555 in 1921 to 34,684 in 1941, or 109.5 per cent, while net ton-miles per freight train hour increased from 7,506 in 1921 to 14,938 in 1941, or 99 per cent. These are new high records in both instances.

"Freight locomotives in 1941 operated a daily average of 116.4 miles, which also was a new high record. The average daily movement of all freight cars, which includes time of cars being loaded and unloaded, was 42.6 miles in 1941, a new high record, and an increase of 65 per cent compared with 1921. Net ton-miles per freight car per day was 795 ton-miles, also a new record. The previous record was established in 1940, with an average of 664 ton-miles per day.

"Fuel efficiency in freight service was never better than in 1941. Despite the increased weight per train and the increase that has taken place in the average speed of trains, the railroads in 1941 averaged 111 pounds of fuel for the movement one mile of 1,000 tons of freight and equipment. This average has never before been attained. For each pound of fuel used in freight service in 1941, the railroads hauled nine tons of freight and equipment one mile compared with 6⅛ tons in 1921, or an increase of 46.3 per cent.

"Railroads on January 1, 1941, had 108,972 freight cars in need of repair or 6.8 per cent of ownership. On January 1, 1942, there were 62,200 or 3.7 per cent, which up to that time was the smallest number on record. Since then, this number has been further reduced with the result that on February 1, 1942, there were 60,869 or 3.6 per cent, which is a new low record."

New York Congressman Lauds Carriers

The country's railroads come in for a considerable amount of praise for the manner in which they have handled freight and passengers during the present emergency in an extension of remarks of Representative Alfred F. Beiter, Democrat of New York, in the Appendix of the Congressional Record of March 12.

"The railroads of this country," declared the New York congressman, "are performing brilliant service in the conduct of the war. To employees and management must go the credit for the indefatigable part they are playing in this struggle. By keeping them rollin' those unsung heroes of the rails are keeping them flying."

After pointing out that the War Department, in its second communique after Pearl Harbor, commended the carriers for their part in the early movement of troops to the west coast, Mr. Beiter went on to say that since that time it has been revealed that in less than seven weeks after our entry into the war, 600,000 troops were moved within the boundaries of the United States—a feat, in his words, "unparalleled in any similar time in American history."

"Nearly every railroad in this country," he continued, "had some part in this gigantic movement. About 75 per cent of these men had sleeping accommodations. The remainder traveled in day coaches. These companies and regiments were moved intact with all equipment. Upon arrival at destination they were ready for action as soon as their equipment was unloaded. This movement was accomplished with the loss of only one man—a cook who was killed in a minor collision."

" . . . Hitler may have moved as many men by rail on some occasions, but when he did, all other traffic was stopped. The American railroads, however, not only handled this gigantic troop movement but at the same time continued to move all other freight and passenger traffic as well with little if any delay."

The laudatory statement also notes that last August claims were made that the Atlantic seaboard was threatened with an oil shortage. At that time, said Mr. Beiter, the railroads stated that they could move a daily average of 200,000 barrels of oil into that area. Since early this year, he pointed out, the amount of such oil being moved by rail into the Atlantic states has continued to increase with the result that it now exceeds 300,000 barrels daily.

The statement proceeds to note that rail transportation has reached the point where today the ability of rail carriers to handle the increasing traffic does not depend on extensions of their rights-of-way and terminal facilities, but on their ability to add to their supply of cars and locomotives as they need them. Through years of experience, it continues, railroad officials can appraise the business situation and foresee the amount of equipment that will be needed. As a result, Mr. Beiter observes that they map out their programs accordingly.

"But," he warns his colleagues, "unless those in the government who are in charge of priorities for steel and other materials needed for the construction of new equipment and for maintenance purposes are willing to allocate adequate material, then the railroads may encounter some difficulties in providing adequate transportation. In view of the serious rubber shortage, which might eventually reach the point of seriously reducing the number of motor trucks on the highways, it is all the more important that government officials having these priorities in charge realize that the railroads and their millions of employees are absolutely essential for the successful prosecution of the war."

Mr. Beiter's statement closes by praising the work of the Association of American Railroads, including its Car Service Division and its public relations department.

Stevenson of WPB Reviews Material Situation

The War Production Board's approval of a new plan to assist the railroads in obtaining necessary materials for maintaining equipment and track was announced by Andrew Stevenson, chief of the Transportation Equipment Branch, in an address before the Western Railway Club in Chicago on March 16. In reviewing the railway material situation, the speaker stated that a general preference rating order, P-88, has been devised which will supersede orders P-8, P-21 and P-100 as soon as copies and forms can be prepared. This will take several weeks.

The new order has been designed especially to relieve the problem of getting materials for maintenance of way by grant-

Santa Fe Railway

Andrew Stevenson, Chief of Transportation Equipment Branch, WPB, addressing the Western Railway Club of Chicago on March 16, 1942, on the Railway Material Situation

ing A-3 ratings for materials essential for track as well as for equipment maintenance and by allowing ratings as high as A-1-a for the delivery of materials needed for emergency repairs, while granting an A-8 priority for less important maintenance and operating supplies. Only an A-10 rating is available for maintenance and repairs at present. Builders of freight cars and locomotives will operate under the production requirements plan, now in effect, and new construction for railroads will continue to be handled by means of the project preference rating order P-19-a. The use of the new order P-88 will involve an inventory control which will be accomplished by quarterly report to WPB.

The speaker reviewed the action which has been taken by WPB through special orders to manufacturers of steel and through other arrangements with manufacturers and railroads to expedite the delivery of materials for the construction of equipment, and saw no reason why the program to build 36,000 freight cars during the first three months of 1942 should not be completed by April 1 as scheduled and also saw no reason from a material standpoint why both steam and Diesel locomotives should not be delivered as scheduled at the first of the year. He stated, however, that the material situation is acute and will become more critical and that railroads, while essential to the war effort, must not expect materials beyond essential needs. The assurance of material for any item at this time definitely carries with it the responsibility that every pound will be utilized to the utmost, he said, and pointed out that this is a responsibility which attaches to every user, whether he employs the material in a freight car or in a tank.

He referred to the promptness with which the roads have adopted narrower plates in car construction, to the work by committees of the A.A.R. and individual roads in the reduction or elimination of copper, to studies looking toward the alteration of car designs, and to the substitution or elimination of castings wherever possible in car construction and added: "In the conservation of maintenance materials we have received much assistance from the army in its use of relay rail supplied by railroads and the co-operation of the railroads in supplying this rail will continue to be extremely important. But in other items, all roads have not been equally considerate of the need to conserve steel, as evidenced by requests for priority assistance in replacing serviceable trestles with steel bridges, for the erection of new passenger terminals or constructing new sand or coaling stations where other facilities exist. Regardless of the individual items, the overall picture in steel is so grave, he pointed out, that every effort must continue to be put forth in avoiding its use where possible. In this connection, he added, continued ordering of steel where the railroad has a substantial inventory on hand is not only unthinkable but intolerable and he urged railroads to scrutinize their stated maintenance requirements of materials for way and structures, especially rail, to discover possibilities of making further reductions.

The speaker forecast that the facilities of the railway equipment and supply industry will be used more extensively in the future in the production of war materials. These facilities, he stated, lend themselves peculiarly to this type of work and the industries are already undertaking to turn out in war goods three times the amount of any of their recent year's production of normal products. This he regarded as an enviable record and one not exceeded by any other industry. These companies will be expected to do more, however, according to the speaker, and the railroad shops will also be called upon to increase their production of war materials.

Supply Trade

Johns-Manville Corporation Annual Report

Consolidated net earnings of the Johns-Manville Corporation in 1941 amounted to $5,967,145 compared to $5,882,071 in 1940. Earnings before income and excess profits taxes were $17,491,975, the largest in the company's history and compared with $9,252,071 in 1940. Net sales were at a record high of $92,852,483, an increase of 50 per cent over sales of $61,761,236 in 1940. Total taxes for 1941 (federal, state, local and foreign) amounted to $12,366,274 and were 2.7 times as great as in 1940, when total taxes were $4,642,007.

J. G. Brill Company Annual Report

The J. G. Brill Company reported orders booked during 1941 amounting to $14,991,790, which is an increase of $4,249,345, or 40 per cent, over 1940 bookings. Net sales billed amounted to $8,838,360, or a decrease of approximately twelve per cent from 1940 billings of $10,085,563. Unfilled orders at December 31, 1941, totaled $12,919,668, as compared to $4,965,401 at the end of 1940. A net loss of $405,242 was reported for 1941 after charges totaling $207,398 for capital stock, federal social security, unemployment insurance, real estate and other taxes, and after provision of $209,640 for depreciation.

Westinghouse Electric & Manufacturing Co. Annual Report

New records were made by the Westinghouse Electric & Manufacturing Co. during 1941 in the volume of incoming orders, amount of sales billed, volume of unfilled orders, number of employees and total payroll. Orders received during the year amounted to $582,808,634, as compared with $400,477,724 in 1940, an increase of 46 per cent. This does not include orders placed for production at ordnance plants which the company is operating for the Navy. Net sales billed amounted to $369,094,124, as compared with $239,431,447 in 1940, an increase of 54 per cent. Net income during 1941 was $23,117,510 ($7.21 per share of common stock), as compared with $18,985,428 in 1940, an increase of 22 per cent.

The company reported that its engineering accomplishments in 1941 exceeded those of any previous year and included in these accomplishments the building of nine 125-ton electric locomotives, the largest used in open-pit mining, for the copper mines at Morenci, Ariz.

Electric Storage Battery Company Annual Report

The Electric Storage Battery Company and subsidiaries reported consolidated net income of $3,312,413 for the year ended December 31, 1941—after provision for fluctuation in inventory values, loss on foreign exchange and a $3,126,875 provision for state and federal income and excess profits taxes and estimated foreign income taxes. This compares with 1940 net income amounting to $2,167,592. Sales continued to increase during the year, totaling $47,553,169, compared with $33,151,906 in 1940 and $28,408,743 in 1939. Consolidated balance sheet as of December 31, 1941, showed current assets of $30,905,210, including cash of $4,717,809 and marketable securities at cost of $7,283,470. Current liabilities as of the same date were $6,295,414.

Safety Car Heating & Lighting Co. Annual Report

The Safety Car Heating & Lighting Co. reported a net profit for the calendar year 1941 of $1,035,590, as compared with a net profit in 1940 of $285,519. Dividends of $5.50 per share were paid during the year, as compared with $3 dispersed in 1940. Earned surplus at the end of the year amounted to $1,602,039, as compared with $1,115,188 at the end of 1940. In his annual report, W. L. Conwell, president, stated that priorities and restrictions have seriously curtailed production in the company's regular field. He pointed out that this, however, means the accumulation of deferred requirements which must be satisfied when the war is over. In the meantime, the company has been enabled to fill orders from the ordnance department, and to perform other close precision operations for war production. He expressed the hope that the company would be successful in securing sufficient diversification in war orders to engage fully its varied facilities.

General Electric Company Annual Report

Reflecting an unprecedented demand for all its products, a total of $1,132,887,258 of new business was booked by the General Electric Company during 1941, an amount which exceeded by 73 per cent the previous record total booked during 1940. Shipments billed to customers amounted to $679,333,760, a total 65 per cent greater than that for 1940 and 64 per cent greater than that for the previous record billing year of 1929. Net profit to the company during the year amounted to $57,197,499 ($1.98 per share, common stock), as compared with $56,241,083 in 1940, an increase of two per cent. The amount provided out of income for all 1941 taxes totaled $144,978,000 ($120,000,000 for federal income and excess profits taxes), or 164 per cent more than the previous record total of $54,943,000 provided for 1940 taxes, and

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"The Freight Train provides the circulation that means Life To The Nation"

C & O 2-6-6-6 "Allegheny Type" locomotive built by Lima Locomotive Works, Inc.

Now, more than ever, the continuous hauling of heavier freight at higher speeds is of vital importance to the preservation of our American way of life.

The railroads of America have brought the handling of freight to a point of unprecedented efficiency. Over the past two decades average freight-train speed has increased 45 per cent, freight-car capacity has increased from 42 tons to 50, and a day's freight-train run has been almost doubled.

Modern Lima Super-Power Steam Locomotives, as exemplified in the new C & O 2-6-6-6 "Allegheny Type" locomotives now in service, have an important part in this achievement. Because of their greater drawbar horsepower and faster speeds they are helping America to "keep 'em rolling".

LIMA LOCOMOTIVE WORKS, LIMA LOCOMOTIVE WORKS INCORPORATED INCORPORATED, LIMA, OHIO

was substantially greater than the aggregate amount set aside for such purposes during the entire ten-year period prior to 1940.

United States Steel Corporation Annual Report

Direct and indirect demands for defense and lend-lease needs have reached the equivalent of more than three-fourths of United States Steel's current steel shipments, Irving S. Olds, chairman of the board, disclosed in the company's 1941 annual report. U. S. Steel's shipments of rolled and finished steel during the year totaled more than 20 million net tons—an all-time high and an increase of more than one-third over 1940 shipments. The net tons of ingots produced by U. S. Steel subsidiaries also established an all-time record and represented an increase of more than one-fourth over the 1940 production. Rolled and finished steel production was maintained throughout the year in excess of full-rated capacity. Significant comparisons follow:

	1941	1940
Gross sales and revenues	$1,620,515,110	$1,076,471,158
Cost of goods sold and operating expenses	1,112,143,410	736,523,709
	508,371,700	339,947,449
Other operating expenses	270,407,138	202,191,244
Operating income	237,964,562	137,756,205
Other income and deductions (net)	2,939,911	4,393,227
Interest on bonds and mortgages	6,033,398	13,638,150
Provision for Federal income and excess profits taxes	118,700,000	26,300,000
Net income	$116,171,075	$102,211,282

General American Transportation Corporation

The annual report of the General American Transportation Corporation and its subsidiaries for 1941 shows a net profit of $3,905,635 as compared with $4,242,404 in 1940. The results of 1941, according to Lester N. Selig, president, in a statement to stockholders, shows that while the company's profit before federal taxes increased to $7,702,209, or more than $2,000,000 above that of 1940, the net profit was somewhat lower than in 1940 due to a sharp increase in the Federal tax rates. "There is a need for additional equipment," the statement continues, "to maintain at peak performance the country's indispensable system of railroad transportation. In our manufacturing plants tank cars are being built as fast as material is available. Freight cars are being built not only for the railroads, but also for Lend-Lease and for the Navy and Army arsenals. In the manufacture of heavy welded steel equipment your Company's shops are filled with Government orders of many kinds. The Company's terminals are performing a vital service for the Navy in the barrelling, drumming and canning of fuels, chemicals and lubricants, in addition to being a transportation adjunct for storage and export shipment of liquid commodities. Because of the tremendous demand for increased bus transportation since the curtailment of production and use of privately owned motor cars, the Company's Bus Division is producing motor buses to its fullest extent. In the ordnance field the Company has added to its facilities a complete shell-making plant and is now delivering shells completely forged and machined. It is expected that within a very short time the Company will also be producing other types of important munitions. Plans are being made for the extension of the company's facilities to weld large quantities of armor plate tank hulls.

J. L. Mahon, former superintendent of foundries at the Detroit, Mich., plant of the **American Car & Foundry Co.,** has been appointed district manager.

Joseph T. Wright has been appointed manager of the compressor and tool division of the Holyoke, Mass., plant of the **Worthington Pump & Machinery Corporation.**

C. I. Lusink, formerly mechanical engineer, has been promoted to chief mechanical engineer of the **Symington-Gould Corporation. C. P. Noser** has been appointed assistant to the chief mechanical engineer. At this company's Rochester, N. Y., plant **E. R. Oeschger** has been appointed mechanical engineer and **E. J. Warnock** chief draftsman. In the Depew, N. Y., plant **R. E. Blakely** has been appointed resident engineer, **C. I. Smith** chief draftsman, and **W. C. Weaver** assistant works engineer.

The Waugh Laboratories of New York, a division of the Waugh Equipment Company, has opened a Pacific coast branch with offices in the Petroleum building, 714 Olympic boulevard, Los Angeles, Cal. **Emmett M. Irwin** has been placed in charge. Mr. Irwin, a graduate of the California Institute of Technology, has been engaged for many years as a consulting engineer in Los Angeles. He acted in this capacity on the wind tunnel at Akron, Ohio, was consulting and construction engineer on the Diesel-electric power plant at Crescent City, Cal., and was assistant consulting engineer for the Imperial irrigation district in connection with the power project for the All American canal. He was also engineer in charge of design for the pump testing laboratory of the metropolitan water district of southern California, chief electrical engineer in charge of design and construction of all controls and drives for the 200-in. telescope being constructed at Palomar Mt., Cal., and chief engineer for the Magnetest Corporation of Long Beach, Cal., developing a magnetic testing system for use in connection with the fatigue of metals.

Emmett M. Irwin

Edwin H. Brown, who has been elected vice-president of the **Allis-Chalmers Manufacturing Company** in charge of engineering and development, as reported in the *Railway Age* of March 7, graduated from the University of Nebraska in 1906 and immediately thereafter entered the Allis-Chalmers course of training for graduate engineers. Upon completion of the two year engineer apprentice course, he served in various capacities with the company, and then became assistant manager of the steam turbine department. In 1935 he was promoted to manager and chief engineer of the engine and condenser department which position he has held until his recent election.

Edwin H. Brown

OBITUARY

John F. Pratt, vice-president of the Brake Equipment & Supply Co., of Chicago, died February 28 at his home in Riverside, Ill. Mr. Pratt was connected with the Grand Trunk Railway from 1888 to 1900 and with the Great Northern Railway from 1900 to 1920. He was general storekeeper for this latter road from September, 1916, to April, 1920. From April, 1920, to July, 1925, he was general storekeeper and local purchasing agent for the Cuba Railroad, Camaquey, Cuba. He joined the Brake Equipment & Supply Co. in 1925.

Edward T. Fishwick, senior vice-president and a director of the Worthington Pump & Machinery Corporation, died March 15 at his home in Glen Ridge, N. J. Mr. Fishwick had been with the Worthington organization for 49 years. He originally started with the corporation at its Cincinnati, Ohio, works. He was also president and a director of the Worthington-Gamon Meter Company of Newark, N. J.; a director of the Glen Ridge Trust Company; a director of the New Jersey State Chamber of Commerce; and was formerly head of the Diesel Engine Manufacturers' Association.

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THE PROGRESS REPORT OF THE RAILROAD DIVISION OF THE A.S.M.E. FOR 1940-41 STATES:

". . . economy increased to more than 30% at 100 mph"

"The disclosure of the results of laboratory and road tests of this locomotive*, equipped with the Franklin (oscillating-cam poppet-valve) system of steam distribution, is an outstanding event of the current year. In road tests, the locomotive, which has two 27-in. x 28-in. cylinders, 205 psi working pressure, and 80-in. drivers, developed a maximum horsepower of 2980 at 60-65 mph. Compared with the results of the A.A.R. passenger-train tests, previously reported in this series of papers, the gain in drawbar horsepower was 24 per cent at 60 mph, 33 per cent at 70 mph, and 44 per cent at 80 mph. With a 1000-ton train on level track, the poppet-valve engine attained 88 mph, and the original engine 78.5 mph. In general, the road tests showed the capability of the poppet-valve locomotive to meet the fastest schedules on the fast Fort Wayne-Chicago Division with trains of 13 cars. On the test plant, the locomotive developed a maximum indicated horsepower of 4267 at 75 mph and 4100 at 100 mph. With a steam consumption of 70,000 lb, the engine used about one seventh less steam per indicated horsepower at moderate speeds, and the improvement in economy increased to more than 30 per cent at 100 mph."

*The well-known K-4 Class of the Pennsylvania Railroad.

THE FRANKLIN SYSTEM OF Steam Distribution

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO

***In Canada:* FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL**

Equipment and Supplies

Southern Pacific Spends $12,000,000 for 70 Locomotives

The Southern Pacific has placed orders for a total of 40 steam locomotives and 30 Diesel-electric switching engines at cost of approximately $12,000,000. Deliveries of the new equipment are expected to start in October of this year.

Included in the steam locomotives are 30 of the railroad's articulated-consolidation type to be constructed by the Baldwin Locomotive Works. These locomotives, of 4-8-8-2 wheel arrangement, among the most powerful in the world, have been improved in recent years so as to make high speeds and are now adaptable to varied service carrying heavy hauls of either freight or passenger trains. The other ten steam engines, to be constructed by the Lima Locomotive Works, will be of the streamlined "Daylight" type, with 4-8-4 wheel arrangement, for passenger and fast freight service.

The 30 Diesel-electric locomotives, of 1,000 hp. each, for general use in the road's principal terminals, will be supplied by the American Locomotive Company.

The new motive power, according to A. T. Mercier, president of the railroad, is being purchased in anticipation of still heavier war-time demands upon the carrier's facilities. Since 1939 the company has received or ordered 253 steam and Diesel engines, with the purchases starting well in advance of the national defense program. When delivery is made on the new order, the motive power on the Southern Pacific's Pacific lines will have almost twice the tractive effort of that in service on the Pacific lines in World War I.

Deliveries are now under way and will be completed by August, 1942, on more than $12,000,000 worth of locomotives purchased by the Southern Pacific last year, chiefly including 40 articulated-consolidation locomotives ordered from the Baldwin Locomotive Works and 10 streamlined Daylight engines ordered from the Lima Locomotive Works in March, 1941. Subsequent to the placing of this latter order, the railroad was first reported as considering the purchase of additional steam power in June, 1941 (*Railway Age*, June 21).

LOCOMOTIVES

THE INDIANAPOLIS UNION is inquiring for one or two steam switching locomotives of 0-8-0 type wheel arrangement.

THE UNITED STATES WAR DEPARTMENT is inquiring for twenty, 40 or 60 (42-in. gage) steam locomotives of 2-8-2 type wheel arrangement, materials for which will carry an A-1-i priority rating.

THE SOUTHERN PACIFIC has ordered 70 locomotives, placing 30 articulated-consolidation type with the Baldwin Locomotive Works, 10 "Daylight" type with the Lima Locomotive Works, and 30 1,000 hp. Diesel-electric switchers with the American Locomotive Company. Intention to purchase this equipment was reported in the *Railway Age* of March 14.

THE RICHMOND, FREDERICKSBURG & POTOMAC has placed an order for ten steam locomotives of 2-8-4 type wheel arrangement with the Lima Locomotive Works. Delivery of these locomotives is scheduled for October, 1942.

FREIGHT CARS

THE DULUTH, MISSABE & IRON RANGE has issued inquiries for 2,000 ore cars of 75 tons' capacity.

THE TEXAS & PACIFIC is inquiring for 500 box cars of 50 tons' capacity.

THE UNITED STATES NAVY DEPARTMENT is in the market for 28 flat cars of 40 tons' capacity and 15 box cars of 40 tons' capacity.

THE BALDWIN LOCOMOTIVE WORKS is inquiring for six 50-ft. 50-ton flat cars and five self-clearing hopper cars. These are in addition to 15 50-ton drop-end gondola cars reported in the *Railway Age* of March 14.

THE UNION PACIFIC has ordered 1,000 high-side drop-bottom gondola cars of 50 tons' capacity from the Pullman-Standard Car Manufacturing Company. The inquiry for this equipment was reported in the *Railway Age* of February 21.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed an order with the company's own shops for 35 covered hopper cars of 70 tons' capacity and 35 mill-type gondola cars of 70 tons' capacity. The road will also acquire five 30 cu. yd. air-dump cars.

PASSENGER CARS

An order has been placed with the CANADIAN CAR & FOUNDRY CO. for 26 narrow-gage passenger-train cars for service in Newfoundland. The order comprises the following: 8 first-class coaches, 3 diners, 5 sleeping cars, 3 baggage cars, 3 mail cars and 4 express cars. An inquiry by the United States War Department for this equipment was reported in the *Railway Age* of December 20, 1941.

IRON & STEEL

THE MISSOURI PACIFIC has been authorized by the district court to place orders for $4,000,000 worth of rails and accessories for 1942 and 1943.

Priority Specialists for WPB Industry Branches

Priority specialists have been assigned to each of the War Production Board's industry branches to assist the branch chiefs "in the preparation of priority orders and assignment of priority ratings." Industry branches are found in WPB divisions of Materials, Production, and Industry Operations, the Transportation Branch being in the latter.

Halts Plate Shipments to Three Railroads

The War Production Board's Division of Industry Operations has instructed suppliers of steel plates to make no further shipments, except for locomotive boilers and fire boxes, to the Pennsylvania, New York Central, and Louisville & Nashville.

"The action," said the WPB announcement, "was taken as a result of information contained in the first filing of a new inventory report called for by the Iron and Steel Branch of the WPB. The reports showed that in the case of the Pennsylvania, inventory on hand in plates was approximately seven times the reported average monthly use; in the case of the Louisville & Nashville, inventory was more than 13 times the average monthly use, and for the New York Central, the inventory was more than seven times the average monthly use."

Freight Rate Increase May Be Added to Scrap Prices

Prices which steel mills pay for iron and steel scrap under Revised Price Schedule No. 4 may be increased by the amount of the Ex Parte 148 freight-rate increased, the Office of Price Administration ruled this week in Amendment No. 1 to the schedule. It was explained that there will be no change in computing the shipping point price, but the additional freight charges may be added to the price the consumer pays.

In all cases the new freight charges must be shown as a separate item in the billing; and attention is called to the fact that the schedule stipulates that the maximum transportation charges which may be added to the shipping point price may not exceed the charges which would apply if the cheapest available means of transportation were employed.

New Equipment Installed

Class I railroads put 17,405 new freight cars in service in the first two months of 1942, of which 9,262 were installed in February and 8,143 in January, according to the Association of American Railroads. Of the total number put in service there were 11,610 box, 5,424 coal, 202 refrigerator, 121 flat and 48 miscellaneous freight cars.

Railroads, in the first two months of 1942, also installed 115 new locomotives, of which 46 were steam and 69 were electric and Diesel-electric. In the same period in 1941 they installed 81 of which 21 were steam and 60 were electric and Diesel-electric.

New freight cars on order on March 1, totaled 70,602 compared with 68,070 on February 1, this year and 39,353 on March 1, 1941. Among the new freight cars on order on March 1 this year, were 40,117 box 24,429 coal, 3,534 flat, 1,202 refrigerator, 300 stock and 1,020 miscellaneous.

Class I roads also had 651 new locomo-

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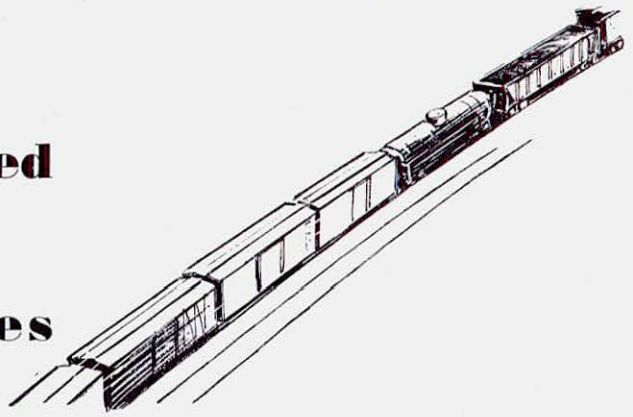
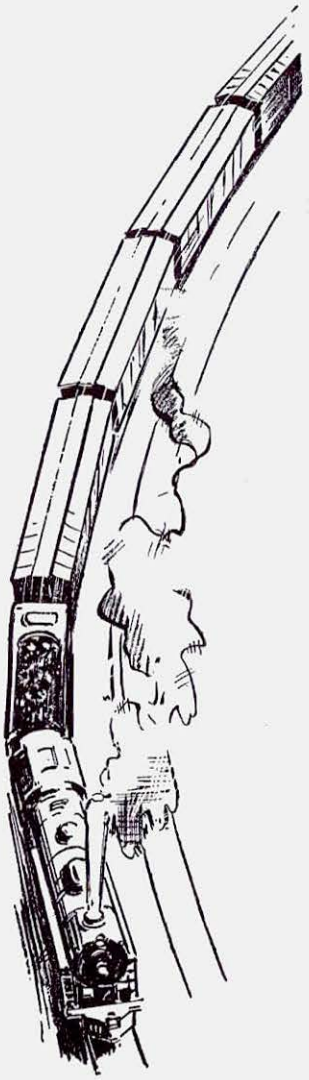
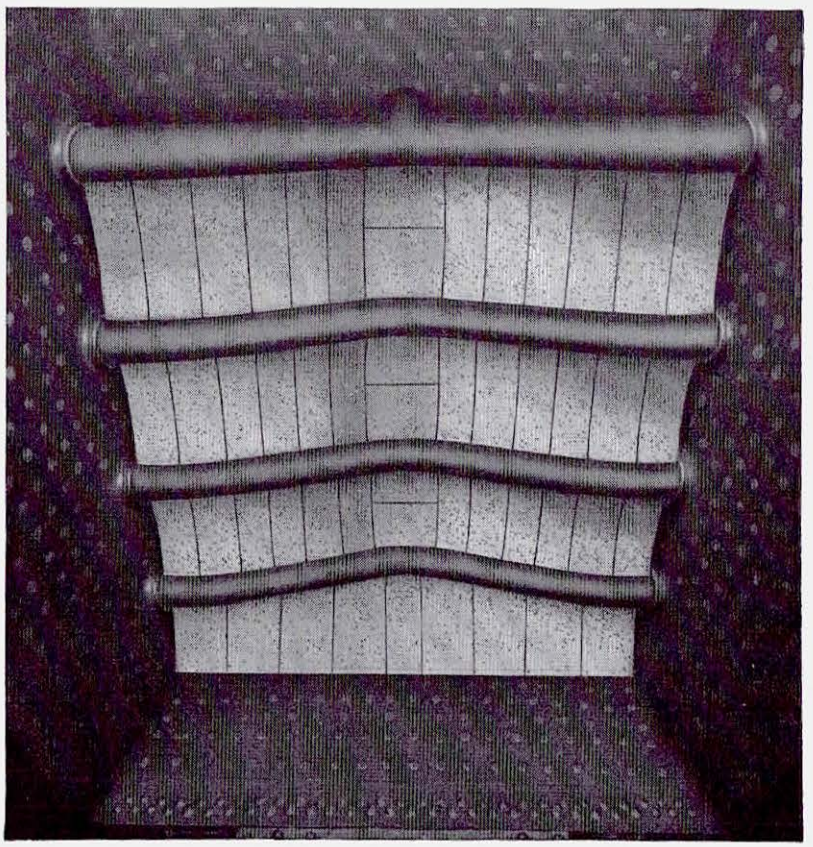
THE HARDER
The Locomotive Is Worked
THE MORE
The Arch Brick Saves



When locomotive runs were short and train speeds slow, the Security Arch showed substantial fuel savings . . . With modern operation, involving long runs at high speeds, the Security Arch shows a greater economy . . . Today the Security Arch costs less per 1,000 ton miles and is a more important fuel saving factor than it was when the service was less severe.





HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED
60 EAST 42nd STREET, NEW YORK, N. Y.
Locomotive Combustion Specialists

tives on order on March 1, of which 300 were steam and 351 were electric and Diesel-electric compared with 298 new locomotives on order on March 1, 1941. Those on order last year included 132 steam and 166 electric and Diesel-electric.

Charges for Extras on Specialties

Amendment No. 1 to Revised Price Schedule 41 (Steel Castings) has been issued by the Office of Price Administration to permit railroad specialty producers to charge for certain extras—coupler repair parts and pattern costs—which were customarily charged by such producers between October 1 and 15, 1941. The schedule had not allowed for the extras when it previously fixed maximum prices of such specialties as side frames, bolsters, couplers, and yokes, at the levels prevailing between last October 1 and 15.

In correcting that deficiency, the amendment does not however reinstate other charges for extras which were made between January 1, 1941, and May 14, 1941, and suspended on the latter date. "The October 1-15 extra charges for pattern costs customarily were made only in a few exceptional instances," the OPA announcement said. "These were where new patterns or revisions of old patterns were for railroad specialties which were experimental in nature. In most cases, these were ordered in small quantities only and were not anticipated as production items."

The amendment also provides that maximum prices for coupler repair parts shall be the prices which customarily were being charged therefor between October 1 and 15, 1941.

Higher Preference Ratings for Repair and Maintenance Materials

Higher preference ratings for railroad maintenance materials and operating supplies and improved procedures in connection therewith have been provided by the War Production Board in Preference Rating Order No. P-88, issued March 17 by J. S. Knowlson, director of WPB's Division of Industry Operations. In addition to providing an A-1-a rating for delivery of materials needed for emergency repairs upon specific approval of WPB, the order in general assigns an A-3 rating to the more important maintenance and operating materials, and an A-8 to other repair parts and supplies. Under the previous set-up, all of the foregoing have had only an A-10 rating under Order P-100 which covers maintenance and operating materials for various industries.

The railroads, however, have had an A-3 rating on materials going into the construction and maintenance of freight cars and locomotives. Henceforth, the new order will embrace freight car and locomotive maintenance materials, and while P-8 and P-20 have been extended until April 30, freight car and locomotive builders are being directed to obtain materials for new equipment in accordance with WPB's Production Requirements Plan under which materials are allocated quarterly by quotas. Another feature of the new P-88 maintenance-and-operations-materials plan is that under which the WPB director of industry operations may assign a rating on deliveries of raw materials, with the quantity and rating to be determined upon a quarterly basis.

As noted above, the new A-1-a rating is assigned to materials needed for emergency repairs. To get it a railroad must communicate with WPB describing the material essential for emergency repair and the nature of the emergency necessitating such repair. The director of industry operations "will notify such railroad whether, and to what extent, its application is approved, and a copy of such notification shall be furnished by the railroad to its supplier to evidence the A-1-a rating."

In addition to embracing the already A-3 rated materials for freight car and locomotive repairs, the new plan raises from A-10 to A-3 the rating on materials to be used for maintenance or repair of passenger cars, rail, track fastenings, turnouts, crossings, bridges, float bridges, turntables, signals, interlockings, centralized traffic control systems, coal and ore handling and conveying machinery, freight handling and warehousing equipment, floating equipment, wreck equipment, maintenance of way work equipment, telephone and telegraph systems, water and fueling plants, car retarders, sales, power plants, transmission systems, and shop tools and equipment; also, operating supplies necessary in the actual operation of trains, cars, or locomotives, and deliveries to the railroads of perishable tools which are consumed in the maintenance or repair of any of the above items of equipment. Raised from A-10 to A-8 are the ratings on deliveries to railroads "of other material necessary for maintenance, repair or operating supplies."

Each rating assigned to the railroad is extensible to suppliers of raw materials going into the maintenance parts involved. The order, however, sets up restrictions on both railroads and suppliers, designed to preclude the accumulation of inventories above "a practicable working minimum." Also, the order stipulates that every railroad and supplier "shall wherever possible use conservation measures such as substitution, redesign and respecification to eliminate scarce materials normally used." In that connection the director of industry operations "may from time to time require the elimination or diminution of the use of any material, with or without substitution of other materials, and may specify the use in the operation, maintenance and repair of railroads to which specific types of material can be put."

Generally, it might be said that the order is designed to meet a need which has been widely recognized for some time by the railroads and the railroad supply industry. The A-10 rating formerly available was not too effective in actually producing the materials it purported to make available; and thus it was often necessary to undertake to obtain higher ratings for specific maintenance and repair programs planned. And while the A-3 is not at this time as effective a rating as it was a few months ago, it is still a major advance over A-10 which has slipped correspondingly. Moreover the new plan has emergency situations covered with the A-1-a rating.

Each railroad may start operating under P-88 as soon as it has filed with WPB, on Form PD 352, a statement showing its present inventories of repair and maintenance supplies. And thereafter the plan will be controlled by quarterly inventory statements submitted to WPB. Pending the transition, the railroads will continue to function under P-100, the aforementioned general maintenance and repair program carrying the A-10 rating, and under orders P-8 and P-21. The latter, which have been extended to April 30, are the orders under which the A-3 rating has been available for materials going into the maintenance and repair of freight cars and locomotives. After a road has received from WPB the PD 351 form authorizing it to assign preference ratings under P-88, that road shall no longer be authorized to assign any ratings under P-8, P-21, and P-100.

Amendment to Copper and Copper Alloy Scrap Schedule

Railroad scrap which is reprocessed under conversion agreements approved by the War Production Board has been excepted by the Office of Price Administration from Revised Price Schedule No. 20—Copper and Copper Alloy Scrap. The exception, contained in Amendment No. 2, is retroactive to February 27, the date on which the schedule was amended to impose maximum prices on copper alloy scrap.

"The exception," said OPA's explanatory statement, "has no real effect upon scrap prices, and will operate to avoid any increase in the net cost of castings to the railroads. It permits a converting foundry to set a book value, higher than maximum prices, on copper alloy scrap materials such as scrap journal bearings, locomotive brass castings, and steam metal, which are returned directly to the foundry for conversion into new products of the same type and composition." The exception is available only to foundries complying with OPA's January 30 request, asking all non-ferrous foundries to hold their prices at October 1-15 levels. Therefore "railroads will not pay higher net prices for the products returned to them under the agreements than prevailed between October 1 and October 15, 1941."

TRADE PUBLICATIONS

"Your Share of a Million Dollars."—The American Brake Shoe & Foundry Co., Brake Shoe and Castings division, 230 Park avenue, New York, has issued a 17½-in. by 14-in. book on brake-shoe research. The illustrations are in color.

Precision Machines and Tools "For Victory."—The Ex-Cell-O Corporation, Detroit, Mich., has issued a 24-page illustrated brochure describing its products now used in the war effort. Consisting chiefly of photographs, the book divides up the company's line of precision machinery and products among various industries in the country. The section on railroads describes the use of Ex-Cell-O pins and bushings and pictures the machinery for their manufacture.

Continued on next left-hand page

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Financial

ALABAMA, TENNESSEE & NORTHERN.—*Amended Reorganization Plan.*—The Interstate Commerce Commission has made certain modifications in its final plan of reorganization for this company which was issued June 25, 1941, one of which would change the effective date from January 1, 1941, to January 1, 1942. Under the modified plan, the amount of new money to be borrowed is limited to $261,797, for which four per cent notes will be issued, the amount borrowed to be repaid over a period of five years, with the right to make additional principal payments on any semi-annual interest payment date and to be secured in the same manner and to the same extent as the new first mortgage bonds provided for in the plan or by a pledge of an equal face amount of new first mortgage bonds. The report notes that the new money will be furnished by private parties, and such parties, instead of the Reconstruction Finance Corporation, will be allowed to nominate one member of the reorganization committee. The provision for sinking fund payments on the first mortgage is changed by increasing the annual rate from one-half of one per cent to one per cent of the principal of the bonds. Also, the commission made some minor clarifying amendments at the suggestion of the RFC.

BALTIMORE & OHIO.—*Contingent Interest Payments.*—The board of directors of this road, on March 18, appropriated $22,073,407.69 out of the income for the year 1941, with which to pay the contingent interest due on the several issues of bonds of the company and its subsidiaries. With this distribution, all interest which has heretofore been deferred under the operation of the company's plan for modification of interest charges and maturities, dated August 15, 1938, will be fully met and satisfied. Thereby, all interest made contingent under the plan and accrued to December 31, 1941, and payable under the plan on May 1, 1942, will be paid on and after April 10, 1942.

The payment, as apportioned per $1,000 bond will be as follows, with bonds of these issues of other denominations in proportion:

Refunding and General Mortgage B. & O. 5s, Series A-D-F	$47.33
Refunding and General Mortgage B. & O. 6s, Series C	56.79
Consolidated Mortgage B. R. & P. 4½s	17.75
First Mortgage C. L. & W. 5s	23.66
First Mortgage B. & O. 5s	31.62
Southwestern Division B. & O. 5s	45.00
30-Year Convertible B. & O. 4½s	147.08

CHICAGO & NORTH WESTERN.—*Abandonment.*—Acting on the request of the federal district court of Illinois, the Interstate Commerce Commission, through Commissioner Porter, has further postponed from March 12, to April 30, the effective date of its order in Finance Docket 13172 wherein it authorized this company to abandon a line between Hastings, Nebr., and Linwood, 102 miles.

CHICAGO & NORTH WESTERN.—*Fixed and Contingent Charges.*—Charles M. Thompson, trustee of the Chicago & North Western, will petition the United States District Court on March 24, for authority to make payments of sums equal to all fixed and contingent charges earned by the North Western in 1941, to the holders of certain securities. The net figure will amount to $8,034,923, with payments to the creditors to be made on the basis of new securities to be issued in lieu of existing securities. Payments will be subject to readjustment, if necessary. This will be the second payment using the proposed reorganization plan as the basis to determine the amounts to be paid. In 1941 the court authorized and directed the trustee to pay sums equal to the fixed and contingent charges earned in 1939 and 1940.

ILLINOIS CENTRAL.—*Abandonment by the Yazoo & Mississippi Valley.*—The Yazoo & Mississippi Valley would be authorized to abandon a branch line extending southeasterly from Rosedale, Miss., to Boyle, 24.1 miles, if Division 4 of the Interstate Commerce Commission adopts a recommended report of its Examiner A. G. Nye.

LEHIGH & NEW ENGLAND.—*Annual Report.*—The 1941 annual report of this company shows net income, after interest and other charges, of $1,043,103, as compared with net income of $844,043 in 1940. Selected items from the income statement follow:

	1941	1940	Increase or Decrease
RAILWAY OPERATING REVENUES	$5,282,487	$4,427,029	+$855,458
Maintenance of way and structures	404,105	371,238	+32,867
Maintenance of equipment	912,970	762,388	+150,582
Transportation	1,567,353	1,377,658	+189,695
TOTAL OPERATING EXPENSES	3,164,700	2,779,451	+385,250
Operating ratio	59.91	62.78	−2.87
NET REVENUE FROM OPERATIONS	2,117,787	1,647,579	+470,208
Railway tax accruals*	758,534	500,009	+258,525
Railway operating income	1,359,253	1,147,569	+211,684
Net Rents—Cr.	28,937	49,711	−20,774
NET RAILWAY OPERATING INCOME	1,388,190	1,197,280	+190,910
Other income	26,404	22,394	+4,010
TOTAL INCOME	1,414,594	1,219,674	+194,920
Interest on funded debt	335,720	344,777	−9,057
TOTAL FIXED CHARGES	352,984	364,132	−11,148
NET INCOME	1,043,103	844,043	+199,060
Disposition of net income:			
Income applied to sinking and other reserve funds	104,310	84,404	+19,906
Income balance transferred to profit and loss	$938,792	$759,639	+$179,154

* Incl. Company's est. of Federal taxes.

MINNEAPOLIS & ST. LOUIS.—*Reorganization Plan Amended.*—The Interstate Commerce Commission has amended its final plan of reorganization for this company, dated March 4, 1941, so as to authorize the Minneapolis & St. Louis Railway Company (a new company) to issue $4,000,000 of first mortgage four per cent bonds; $2,015,000 of second mortgage income bonds, series A, and 150,000 shares of common capital stock without par value, the stock to be delivered upon the payment of $1.90 a share and the proceeds applied to the payment of expenses of the protective committees. Details of the previous commission plan were given in the *Railway Age* of March 15, 1941, page 459. Commissioner Patterson noted a dissent to the majority's opinion.

At the same time Division 4 modified in certain particulars its order of March 4, 1941, approving a $4,000,000 loan to the M. & St. L. Railway Company in connection with the carrying out of the reorganization. One of the most important changes provides that there be omitted from the list of shares of stock to be required to be pledged under the company's first mortgage, $103,600, par value, of the stock of the St. Paul Union Depot and seven shares of the stock of the Keithsburg Bridge Company.

NEW YORK, ONTARIO & WESTERN.—*Annual Report.*—The 1941 annual report of this road shows net deficit, after interest and other charges, of $1,551,662, compared with net deficit of $2,065,745 in 1940. Selected items from the income account follow:

	1941	Increase or Decrease Compared with 1940
RAILWAY OPERATING REVENUES	$6,186,515	+$720,101
Maintenance of way and structures	646,456	−27,574
Maintenance of equipment	1,281,589	−10
Transportation—Rail	3,138,777	+228,872
TOTAL OPERATING EXPENSES	5,527,704	+230,858
Operating ratio	89.35	−7.55
NET REVENUE FROM OPERATIONS	658,811	+489,244
Railway tax accruals	450,173	−55,547
Railway operating income	208,638	+544,791
Net Rents—Dr.	424,664	+44,039
NET RAILWAY OPERATING INCOME*	216,025	−500,752
Other income	18,269	−684
TOTAL INCOME*	197,756	+500,067
Rent for leased roads and equipment	55,734	−13,491
Interest on funded debt	1,230,091	−4,125
TOTAL FIXED CHARGES	1,350,021	16,412
NET INCOME (Deficit)	$1,551,662	$514,083

* Deficit.

PACIFIC COAST.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon a part of its Taylor branch extending from Maple Valley, Wash., to the end of the line at Taylor, 8.7 miles.

READING.—*Abandonment by the Gettysburg & Harrisburg.*—The Gettysburg & Harrisburg and the Reading, respectively, have been authorized by Division 4 of the Interstate Commerce Commission to abandon a portion of the so-called Little Round Top Extension branch and the operation thereof extending in a southerly direction from Gettysburg, Pa., to the end of the line, 2.5 miles.

SOUTHERN PACIFIC.—*Abandonment.*—This company has asked the Interstate

Commerce Commission for authority to abandon a part of its Smeltzer branch extending from Wintersburg, Calif., to Wiebling, 1.1 miles.

SOUTHERN PACIFIC.—*Abandonment.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon the so-called Duarte branch extending in a northeasterly direction from a point of connection with the main line at Alhambra, Calif., to the end of the line at Duarte, 13.3 miles.

SPRINGFIELD & SOUTHWESTERN.—*Acquisition, Trackage Rights, and Securities.*—This recently-created company has been authorized by Division 4 of the Interstate Commerce Commission to acquire and operate that portion of a line of the Chicago, Springfield & St. Louis extending from Springfield, Ill., to Curran, 7.8 miles, and to operate under trackage rights over the Baltimore & Ohio in Springfield, Ill., 0.4 mile.

At the same time the new company was granted authority to issue at par $55,000 of unsecured nonnegotiable promissory notes and $5,000 of common stock, consisting of 50 shares of the par value of $100 each, the notes to be delivered to the Schiavone-Bonomo Corporation in connection with the acquisition of the above-mentioned line, and the stock to be sold and the proceeds used for organization expenses and working capital.

Previously, Division 4 had authorized the Springfield Southern to acquire the line, but in view of the fact that that company has failed to do so and has no objection to the application of the Springfield Southwestern, Division 4 has vacated its certificate granting authority to the Springfield Southern.

SUSQUEHANNA & NEW YORK.—*Abandonment.*—Although this road was granted permission by the Interstate Commerce Commission in January to abandon its entire line (see the *Railway Age* for January 31, page 320), the Pennsylvania Public Utility Commission has ordered a hearing to review the road's position in the light of increased traffic. Originally scheduled for March 13, the hearing has been postponed to March 20, at Williamsport. The S. & N. Y. is a subsidiary of the United States Leather Company.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*Lease.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to extend to January 1, 1953, the lease of the properties of the St. Louis Terminal. The report of Division 4 points out that the lease of 1892, by its terms, expired January 1, 1932, but through inadvertence the parties failed to extend it.

Average Prices of Stocks and Bonds

	Mar. 17	Last week	Last year
Average price of 20 representative railway stocks..	26.74	26.84	29.26
Average price of 20 representative railway bonds..	66.65	66.56	64.10

Railway Officers

EXECUTIVES

Samuel W. Lancaster, general attorney of the Texas & Pacific, has been elected vice-president and general counsel, with headquarters as before at Dallas, Tex., succeeding **Robert S. Shapard,** who has retired from active service.

D. J. Maley, general manager of the Western district of the Erie, with headquarters at Youngstown, Ohio, has been promoted to assistant vice-president at Cleveland, Ohio, succeeding **P. W. Johnston,** who has been furloughed to accept commission in the United States Army.

FINANCIAL, LEGAL AND ACCOUNTING

A. H. Hogan, assistant to the general manager of the Grand Trunk Western, has been appointed assistant auditor, with headquarters as before at Detroit, Mich., succeeding **C. J. Gillespie,** who has retired from active service.

M. E. Clinton, assistant general attorney of the Texas & Pacific, has been promoted to general attorney, with headquarters as before at Dallas, Tex., succeeding **Samuel W. Lancaster,** whose election as vice-president and general counsel is reported elsewhere in these columns.

Luis G. Pastor, secretary and comptroller of the Vera Cruz Terminal Company, has been appointed also general accountant of the Mexican Railway, with headquarters as before at Mexico City, D. F., succeeding **Manuel Merino,** who has been retired.

H. J. England, assistant to the vice-president in charge of the financial and accounting departments of the Pullman Company, has been appointed general auditor, with headquarters as before at Chicago, succeeding to the duties of **Henry R. Holmgren,** comptroller, whose death on January 24 was reported in the *Railway Age* on January 31. **L. T. Moore** has been appointed assistant to the vice-president, relieving Mr. England.

OPERATING

C. A. Naffzinger has been appointed superintendent of stations and claim prevention for the Missouri Pacific, with headquarters at St. Louis, Mo., succeeding **Frank A. Clifford,** whose death on February 21 was reported in the *Railway Age* of March 7.

A. O. Thor, trainmaster on the Chicago, Milwaukee, St. Paul & Pacific at Ottumwa, Iowa, has been promoted to assistant superintendent of the Coast division, with headquarters at Spokane, Wash., succeeding **G. H. Hill,** whose promotion to superintendent of the Coast division was reported in the *Railway Age* of March 14.

Leslie T. Wright, trainmaster on the Denver & Rio Grande Western at Glenwood Springs, Colo., has been promoted to assistant superintendent of transportation, a newly created position, with headquarters at Denver, Colo., and **L. H. Hale,** inspector of transportation at Denver, has been advanced to trainmaster at Glenwood Springs, succeeding Mr. Wright.

V. C. Palmer, supervisor of wages of the Grand Trunk Western, has been promoted to assistant to the general manager, with headquarters as before at Detroit, Mich., succeeding **A. H. Hogan,** whose appointment as assistant auditor is reported elsewhere in these columns. **A. J. Clancy** has been appointed supervisor of wages, relieving Mr. Palmer.

S. J. Foster has been appointed superintendent of the Minneapolis, Northfield & Southern, with headquarters at Minneapolis, Minn., succeeding to the duties of **James M. Baths,** general manager, whose appointment as deputy associate director of the Office of Defense Transportation, Division of Railway Transport, with headquarters at San Francisco, Cal., was reported in the *Railway Age* of March 7.

Hubert C. Willis, trainmaster on the Atchison, Topeka & Santa Fe at Arkansas City, Kan., has been promoted to superintendent of the Southern Kansas division, with headquarters at Chanute, Kan., succeeding **Guy R. Buchanan,** who has been transferred to the Eastern division at Emporia, Kan. Mr. Buchanan relieves **A. B. Enderle,** who has been transferred to the Middle division at Newton, Kan., replacing **C. D. Notgrass,** who has been called for military service.

M. G. McInnes, assistant general manager of the Western district of the Erie, with headquarters at Youngstown, Ohio, has been transferred to the Eastern district at Jersey City, N. J., succeeding **A. E. Kriesien,** who has been promoted to general manager of the Western district, with headquarters at Youngstown. **H. V. Bordwell,** division superintendent at Marion, Ohio, has been promoted to assistant general manager at Youngstown, succeeding Mr. McInnes. **V. J. McMullen,** assistant division superintendent at Chicago, has been promoted to superintendent of the Kent division at Marion. **H. H. Clark,** trainmaster at Meadville, Pa., has been promoted to assistant division superintendent at Chicago, succeeding Mr. McMullen.

Roy W. Prentice, trainmaster on the Atchison, Topeka & Santa Fe at Amarillo, Tex., has been promoted to acting superintendent of the Panhandle division, with headquarters at Wellington, Kan., succeeding **F. A. Baker,** who has been transferred to the Albuquerque division, with headquarters at Winslow, Ariz., relieving **E. E. Foulks,** who has been called to military service. **Raymond D. Shelton,** trainmaster of the Slaton division at San Angelo, Tex., has been transferred to Amarillo, replacing Mr. Prentice, and **John D. Raymond,** agent-yardmaster at Canadian, Tex., has been advanced to acting trainmaster at San Angelo, succeeding Mr.

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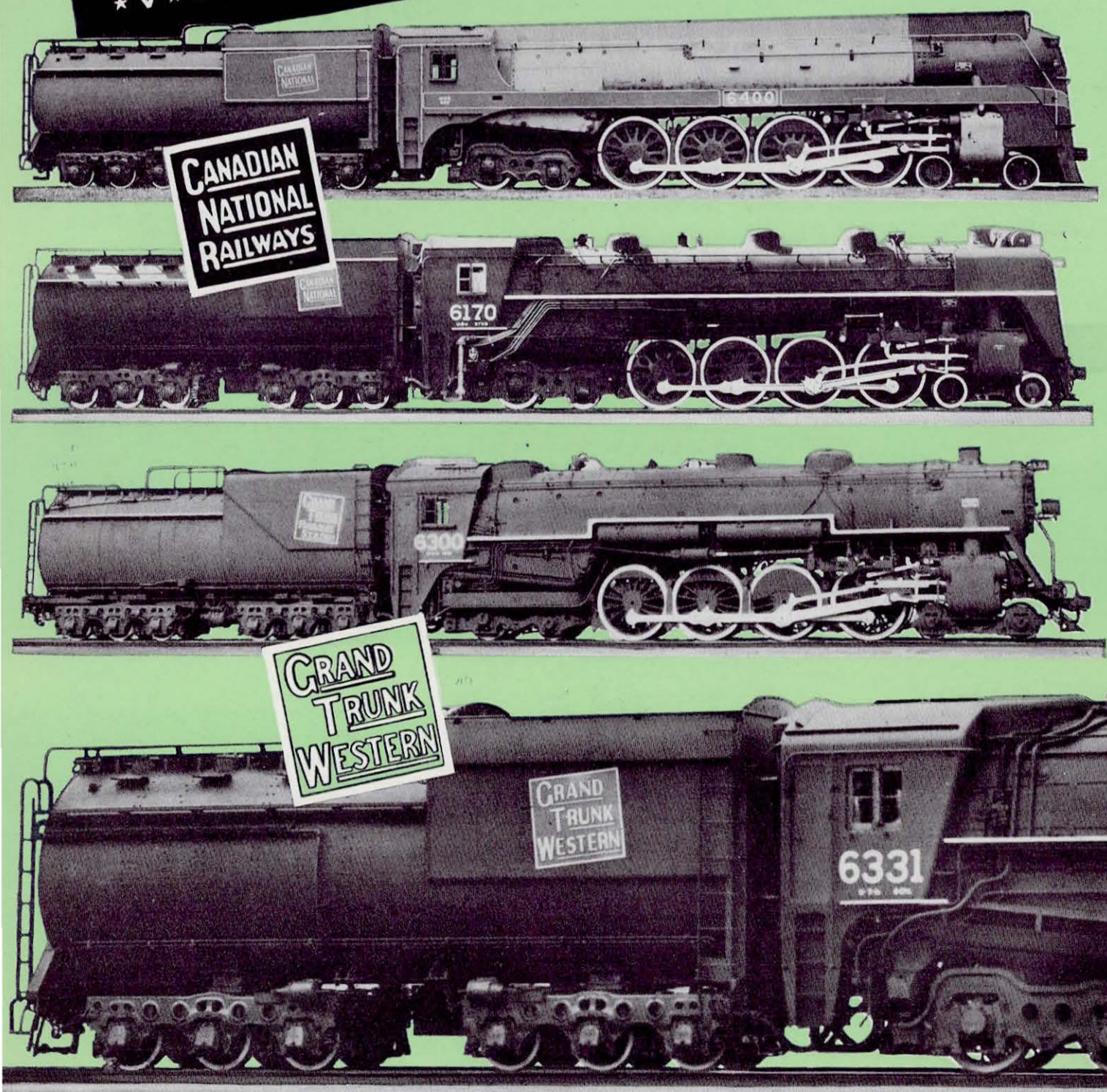
Excerpt from an Address at the
62nd Annual Meeting of the A. S. M. E.
By William C. Dickerman
Chairman of the Board
American Locomotive Company



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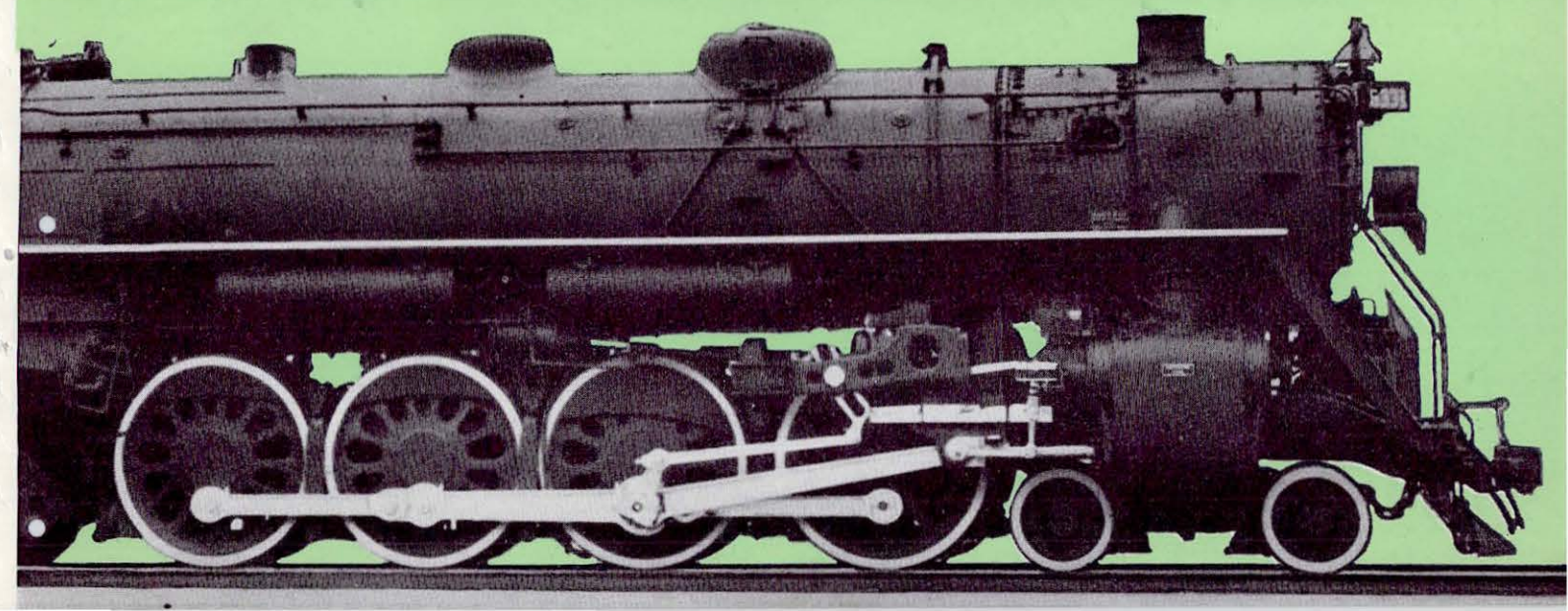

Shelton. **William H. Jones,** roadmaster at Chillicothe, Ill., has been appointed acting trainmaster at La Junta, Colo., succeeding **R. D. McGee,** who has been called to military service.

W. E. Dillard, whose promotion to superintendent of the Columbus division of the Central of Georgia at Columbus, Ga., was reported in the *Railway Age* of March

W. E. Dillard

14, entered railroad service with the Central of Georgia on May 31, 1915, as ticket clerk in the agency at Ellaville, Ga. He went to Fort Mitchell, Ala., a few months later as agent. He then worked as relief agent, operator and cashier at various cities, becoming chief clerk at Columbus, Ga., on July 1, 1932, and agent on November 1, 1933. Mr. Dillard was promoted to trainmaster at Cedartown, Ga., on May 15, 1939, which position he held until his recent promotion.

C. J. Henry, whose promotion to superintendent of the Toledo division of the Pennsylvania, with headquarters at Toledo, Ohio, was reported in the *Railway Age* of January 24, was born in Youngsville, Pa., on December 1, 1900, and graduated

C. J. Henry

from the University of Cincinnati. He first entered the service of the Pennsylvania in the maintenance of way department of the Renovo division on May 19, 1919, and became an assistant on the engineer corps in 1923. He was promoted to assistant supervisor of track on the Long Island Railroad (a subsidiary of the Pennsylvania) in 1926, and was transferred to the Eastern division of the Pennsylvania in 1928. Mr. Henry was advanced to supervisor of track in 1929 and served on the Allegheny, Buffalo, Erie & Ashtabula, Pittsburgh and Philadelphia Terminal divisions until January 1, 1934, when he was promoted to division engineer in the general office at Philadelphia, Pa. On November 16, 1934, he was transferred to the Buffalo division and on July 1, 1937, he was transferred to the Pan Handle division, with headquarters at Pittsburgh, Pa., which position he held until his recent promotion.

Wayne A. Johnston, whose promotion to assistant general manager of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of March 14, was born at Urbana, Ill., on November 19, 1897, and graduated in railway business administration from the College of Commerce, University of Illinois. He entered railway service as a yard clerk for the Peoria & Eastern (part of the New York Central system) at Urbana, later working as a switchman. On October 1, 1919, he went with the Illinois Central as an accountant in the office of the division

Wayne A. Johnston

superintendent at Champaign, Ill., and he was later promoted to chief accountant and chief clerk to the superintendent. In October, 1921, Mr. Johnston was appointed assistant chief clerk to the general superintendent, Northern lines, at Chicago and in September, 1925, he was assigned to the office of the vice-president and general manager. In April, 1934, he was appointed general agent, traffic department, and in February, 1935, he was promoted to office manager to the vice-president in charge of traffic. Mr. Johnston was appointed general traffic agent in September, 1937, and assistant to the general manager in January, 1938. In October, 1940, he was appointed superintendent of the Kentucky division and in September, 1941, he returned to Chicago as assistant to the vice-president and general manager, which position he held until his recent promotion.

S. G. Roney, whose promotion to superintendent of the Macon division of the Central of Georgia at Macon, Ga., was reported in the *Railway Age* of March 14, entered railroad service in 1899 with the Southern and remained with that road until 1914. He went with the Central of Georgia in March, 1916, and from that time until December 9, 1917, was employed as special agent on the Southwestern division. From the latter date until May 5, 1919, he was a locomotive engineer, then serving as captain of police for the Central of Georgia and the Ocean Steamship Com-

S. G. Roney

pany terminals at Savannah. From June 12, 1920, to July 1, 1922, he was road foreman of engines on the Macon division, being promoted to trainmaster on the latter date. On September 1, 1923, he went to Cedartown, Ga., as assistant superintendent of the Chattanooga division, which position he held until August 1, 1927, when he went back to Macon as trainmaster for the Macon division, holding this position at the time of his recent promotion to superintendent of the Macon division.

S. F. Lynch, whose promotion to superintendent of transportation of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of March 14, was born at Jackson, Miss., on September 23, 1893, and attended St. Joseph's Acad-

S. F. Lynch

emy at Jackson. He entered railway service on February 1, 1911, as a clerk in the mechanical department of the Illinois Central at Jackson, later serving as a clerk in the car department at that point. On January 1, 1914, he was promoted to chief clerk to the master mechanic at McComb,

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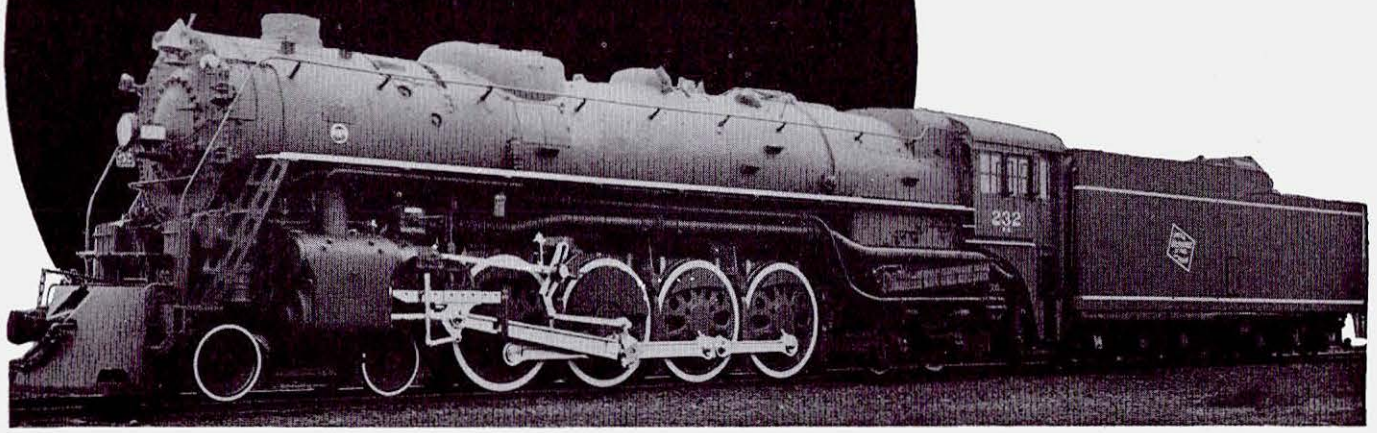
HSGI
Wear Resisting PARTS



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Miss., and on July 1, 1918, he was advanced to chief clerk to the superintendent at Vicksburg, Miss. Mr. Lynch was appointed assistant trainmaster at Vicksburg on October 9, 1928, and on August 1, 1930, he was promoted to trainmaster of the Vicksburg division. On October 15, 1931, he was reappointed chief clerk to the superintendent at Vicksburg and on February 1, 1932, he was advanced to trainmaster on the Springfield division at Freeport, Ill. Mr. Lynch was appointed personnel agent at Chicago on June 1, 1939, and on March 15, 1940, he was appointed office manager to the vice-president and general manager at Chicago, which position he held until his recent promotion, effective March 16.

TRAFFIC

R. C. Klostermeyer has been appointed general agent for the Chicago, Attica & Southern at Cleveland, Ohio, a newly created position.

G. H. Chapman, assistant general freight agent on the Green Bay & Western, has been appointed assistant general freight and passenger agent, with headquarters as before at Green Bay, Wis.

Earl Roach, assistant to the vice-president in charge of traffic of the Nashville, Chattanooga & St. Louis, has been appointed assistant to general freight agent, service and solicitation, with headquarters as before at Nashville, Tenn.

H. L. Tingle, traveling freight agent for the Canadian Pacific and the Minneapolis, St. Paul & Sault Ste. Marie at Dallas, Tex., has been promoted to district freight agent, with the same headquarters and with jurisdiction over the entire state of Texas.

George Brunner, general eastern freight agent for the Missouri Pacific at New York, has been assigned complete supervision over the Boston, Mass., Buffalo, N. Y., New York and Philadelphia, Pa., agencies, succeeding to the duties of **C. E. Carlton,** assistant freight traffic manager at New York, whose retirement on March 1 was reported in the *Railway Age* of March 14.

R. H. Deitiker, assistant general freight agent on the Atchison, Topeka & Santa Fe at Denver, Colo., has been transferred to Los Angeles, Cal., succeeding **A. E. McGowan,** whose death on January 7 was reported in the *Railway Age* of January 17. **F. W. Myers,** who has been president of the Denver Market and Produce Terminal since January 1, has resumed his former duties as assistant general freight agent at Denver, relieving Mr. Deitiker. Mr. Myers will continue also as president of the produce terminal.

Robert L. Hoyt, chief clerk in the passenger department of the Ft. Worth & Denver City, has been promoted to general passenger agent of the Ft. W. & D. C. and the Wichita Valley, with headquarters at Ft. Worth, Tex., succeeding **Fred D. Daggett,** who retired on March 1. Mr. Hoyt was born at Ft. Worth on August 25, 1901, and attended business college and Jefferson Law School in Ft. Worth. He entered railway service on May 3, 1917, as a ticket stamper and office boy in the passenger accounting department of the Ft. W. & D. C. at Ft. Worth, later being promoted through various positions in ticket accounting work. On June 16, 1926, Mr. Hoyt transferred to the passenger traffic

Robert L. Hoyt

department as rate clerk and on February 1, 1929, he was promoted to chief clerk, which position he held until his recent promotion, effective March 1.

Mr. Daggett was born at Girard, Pa., and entered railway service in 1893 with the San Antonio & Arkansas Pass (now part of the Southern Pacific in Texas and Louisiana) as an office boy in the general freight office and the auditor's office. In 1894 he was appointed a clerk in the ticket accounting department and two years later he was promoted to chief clerk. In 1901 he went with the International-Great Northern as a rate clerk in the general passenger office and in 1904 he returned to the S. A. & A. P. as chief clerk in the general passenger office. Mr. Daggett was promoted to assistant general passenger agent in 1914 and in 1925 he went with the Ft. W. & D. C. as assistant general passenger agent. He was promoted to general passenger agent, with headquarters at Ft. Worth, in 1926, which position he held until his retirement.

ENGINEERING & SIGNALING

M. F. Anderson, signal supervisor on the Pere Marquette at Grand Rapids, Mich., has been promoted to assistant signal engineer, a newly created position, with headquarters at Detroit, Mich.

J. C. Hill, general roadmaster of the Green Bay & Western, has been appointed superintendent of track maintenance, with headquarters as before at Green Bay, Wis., a change of title.

Henry C. Archibald, acting engineer of track of the Boston & Maine at Dover, N. H., has been promoted to assistant to the chief engineer. **John P. Cronin,** office engineer at Boston, Mass., has been appointed engineer of design. **Harold W. Legro,** assistant division engineer of the Terminal division at Boston, has been appointed engineer of grade crossings. **Harold S. Ashley,** acting division engineer at Dover, N. H., has been promoted to division engineer of the Portland division. **Frank W. Harper,** general draftsman, has been promoted to office engineer. **Harold F. Tupper,** assistant division engineer at Concord, N. H., has been appointed acting engineer of track.

John E. Fanning, division engineer on the Illinois Central at Waterloo, Iowa, has been promoted to assistant to the chief engineer, a newly created position, with headquarters at Chicago. **N. R. Hill,** supervisor of bridges and buildings at Waterloo, has been promoted to division engineer, with the same headquarters and with jurisdiction from MP W-15 on the Iowa division to the west switch at Waterloo. **T. M. Pittman,** division engineer of the Mississippi division at Water Valley, Miss., has been transferred to Waterloo, with jurisdiction over the lines west of Waterloo. **Paul H. Croft,** acting division engineer at Clinton, Ill., has been advanced to division engineer at Water Valley, relieving Mr. Pittman.

H. G. Carter, whose promotion to engineer maintenance of way of the Central of Georgia, with headquarters at Savannah, Ga., was reported in the *Railway Age* of March 14, was born on January 24,

H. G. Carter

1892, and attended the Georgia School of Technology, Atlanta, Ga., and Alabama Polytechnic Institute, Auburn, Ala., graduating in civil engineering from the latter institution in 1914. He entered the service of the Central of Georgia in the office of the chief engineer at Savannah in January, 1918, and in October, 1918, he was appointed assistant engineer on the Columbus division, three months later being transferred to the Southwestern division. In January, 1925, Mr. Carter was promoted to division engineer of the Southwestern division, with headquarters at Macon, Ga., and in October, 1931, he was transferred to the Columbus division, with headquarters at Columbus, Ga., which position he held until his recent promotion, effective March 1.

Clyde Parker Nicholson, whose promotion to assistant chief engineer of the Norfolk Southern at Norfolk, Va., was reported in the *Railway Age* of March 7, was born on December 13, 1898, at Norfolk. He attended Virginia Military Institute and entered railroad service on July

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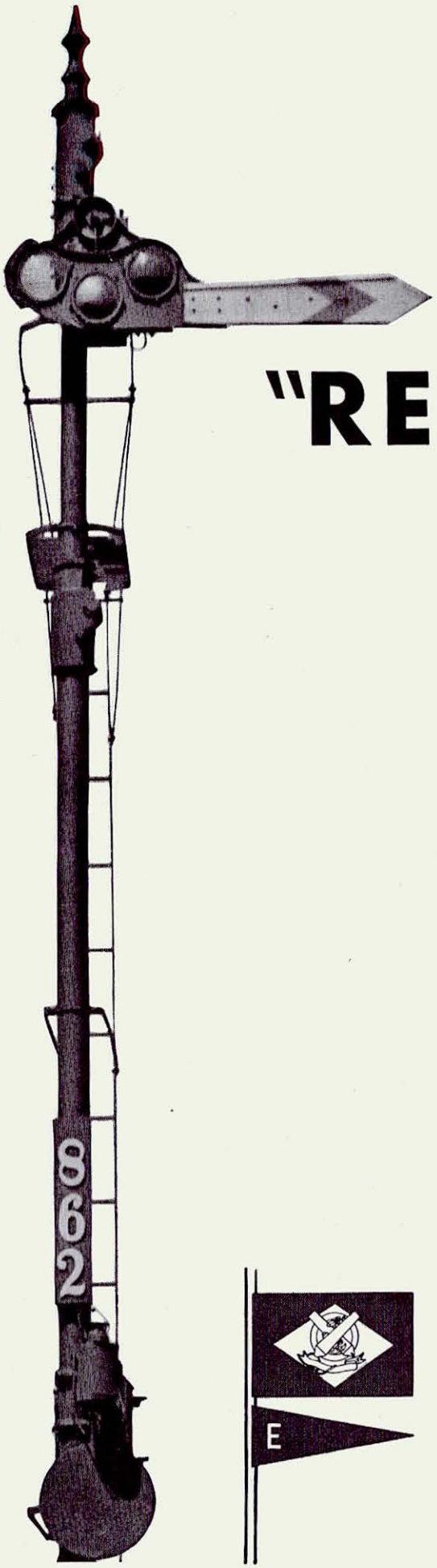

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1, 1919, with the Norfolk Southern, serving as rodman and chainman, track work and property lines. On March 30, 1921, he became draftsman and engaged in general office work. From June 1, 1923, to June 1, 1933, Mr. Nicholson was draftsman in charge of estimating and designing tracks, roadway, buildings and bridges and from June 1, 1933, to May 1, 1936, he was assistant engineer in charge of office work and forces. From May 1, 1936, to August 1, 1937, he was division engineer in charge of maintenance of way and structures of the Northern division, and on the latter date he became engineer maintenance of way and structures for the entire system, which position he held until his recent promotion. Mr. Nicholson has been a

Clyde Parker Nicholson

member of Committee I-Roadway of the American Railway Engineering Association since 1939.

PURCHASES AND STORES

Jose F. Romo, general storekeeper of the Mexico North-Western, has been appointed purchasing agent, with headquarters as before at Ciudad Juarez, Chih., a change of title.

H. R. Phillips, chief clerk to the storekeeper on the Denver & Rio Grande Western at Salt Lake City, Utah, has been promoted to supervisor of salvage, a newly created position, with headquarters at Denver, Colo.

Kossuth P. Chinn, whose promotion to assistant purchasing agent of the Southern Pacific Lines in Texas and Louisiana, with headquarters at New Orleans, La., was reported in the *Railway Age* of March 7, was born at Wichita, Kan., on June 29, 1893, and entered railway service on November 1, 1912, as a commissary clerk on the Texas & New Orleans (part of the Southern Pacific Lines in Texas and Louisiana) at Houston, Tex. In 1913 he was appointed construction clerk at Hearne, Tex., on the construction of the line from Hearne to San Antonio, Tex. From 1914 to 1917 he served as timekeeper on the Austin division at Austin, Tex., and in May, 1919, following service in the first World War, he returned to the T. & N. O. as division storekeeper at Houston, Tex. Six months later, Mr. Chinn was appointed traveling storekeeper at Houston and in 1922 he was assigned to special duties

Kossuth P. Chinn

in the office of the president in connection with Federal Control settlements. In 1926 he was appointed assistant general storekeeper at Houston and in 1930 he was appointed trainmaster at Jacksonville, Tex. Mr. Chinn returned to Houston in 1931 as assistant general storekeeper and in 1937 he was appointed assistant superintendent at Ennis, Tex., which position he held until his recent promotion, effective February 16.

OBITUARY

William C. Juhnke, who retired in 1937 as assistant superintendent of dining and sleeping cars for the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, died of heart disease on March 16 at Miami, Fla.

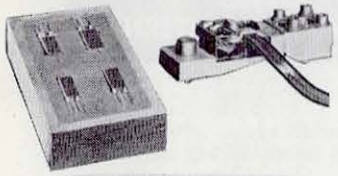
Harry F. Lambert, vice-president and general manager of the Great Western Railway and traffic manager of the Great Western Sugar Company, with headquarters at Denver, Colo., died on March 9 at St. Joseph's hospital, Denver, following a long illness.

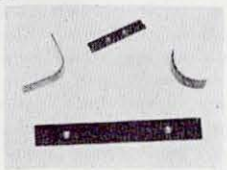
M. E. Pangle, formerly assistant to the president of the Chicago & North Western, who retired on May 1, 1940, as director of personnel, with headquarters at Chicago, died from heart trouble in a Riverside (Cal.) hospital on February 26. Mr. Pangle was born at Geneva, Neb., in 1875, and entered the service of the Chicago & North Western in 1896 as a freight brakeman at Chadron, Neb. He served successively as a conductor and trainmaster at Chadron and trainmaster at Norfolk, Neb., until 1908, when he was advanced to division superintendent at the latter point. In 1922, Mr. Pangle was transferred to Chicago as assistant to the general manager, later serving as assistant to the vice-president, with the same headquarters. In 1925, he returned to Norfolk as assistant general superintendent, Lines West, and in March, 1934, he was promoted to assistant to the president in charge of personnel, with headquarters at Chicago. In 1939, his title was changed to director of personnel, which position he held until his retirement.

Henry R. Koch, superintendent of the Wisconsin division of the Chicago & North Western, with headquarters at Chicago, died on March 15 at the Oak Park (Ill.) hospital after an illness of a week. Mr. Koch was born at Norwalk, Wis., on March 14, 1886, and entered railway service on May 14, 1901, as a telegrapher and agent on the Madison division of the North Western. Four years later, he was promoted to train dispatcher on that division, and on April 1, 1914, he was advanced to transportation inspector, with headquarters at Chicago. On April 1, 1917, he was appointed chief dispatcher at Adams, Wis., and fifteen days later was transferred to Chicago. On January 1, 1925, he was promoted to trainmaster on the Iowa division, with headquarters first at Boone, Iowa, and later at Council Bluffs, Iowa. Mr. Koch was advanced to assistant superintendent of the Iowa division, with headquarters at Clinton, Iowa, on June 1, 1927, and a year later he was transferred to the Galena division, with headquarters at Chicago. On December 1, 1938, he was promoted to superintendent of the Galena division, and two years later he was transferred to the Wisconsin division, with headquarters as before at Chicago.

Frederick B. Wiegand, who retired on April 1, 1940, as signal engineer of the New York Central system, with headquarters at Cleveland, Ohio, died in that city on March 16 after an illness of several weeks. Mr. Wiegand entered the service of the New York Central & Hudson River (now the New York Central) on April 12, 1891, as a signal maintainer. In May, 1894, he was appointed signal inspector on the Harlem division and in October, 1901, he was appointed assistant signal supervisor on the Hudson division. In July, 1902, he was promoted to signal supervisor on the River division. Mr. Wiegand was appointed general signal inspector of the entire road in March, 1903, and three months later was appointed signal supervisor of the Mohawk division. In July, 1906, he was appointed assistant signal engineer of the Lake Shore & Michigan Southern (now part of the New York Central), and in October, 1913, he was promoted to signal engineer of the New York Central, Lines west of Buffalo. In 1922, Mr. Wiegand acted also in a consulting capacity for the Cleveland Union Terminals Company, and on March 1, 1925, his jurisdiction was extended over the Ohio Central lines, which railroad at that time was leased by the New York Central. On September 1, 1933, his jurisdiction was extended to include the Lines east of Buffalo, and on June 1, 1937, his jurisdiction was extended over the Michigan Central. On September 1, 1937, his jurisdiction was extended again to include the Cleveland, Cincinnati, Chicago & St. Louis. For many years Mr. Wiegand was active in the work of the Signal Section, A. A. R., and served as chairman of that body in 1922.

The field for the application of strain measurement is so broad and the variety of gages and auxiliary equipment available so great, that the selection of the proper instrument for the specific job is often confusing. Care is essential in making this selection for satisfactory results. Of the many types of gages and auxiliary equipment available, a few are illustrated below.

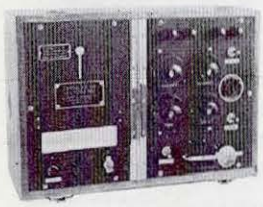




ELECTRIC STRAIN GAGES

Here are three types of electric gages that are widely used to measure strains in propellers, bridges, buildings, dams, towers, and other engineering members.

Illustrated: SR-4 Bonded Metalectric, Electro-Magnetic, and Ess or Strip Gages.



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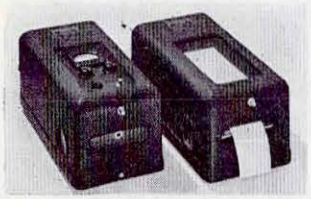


AMPLIFIER AND OSCILLOGRAPH

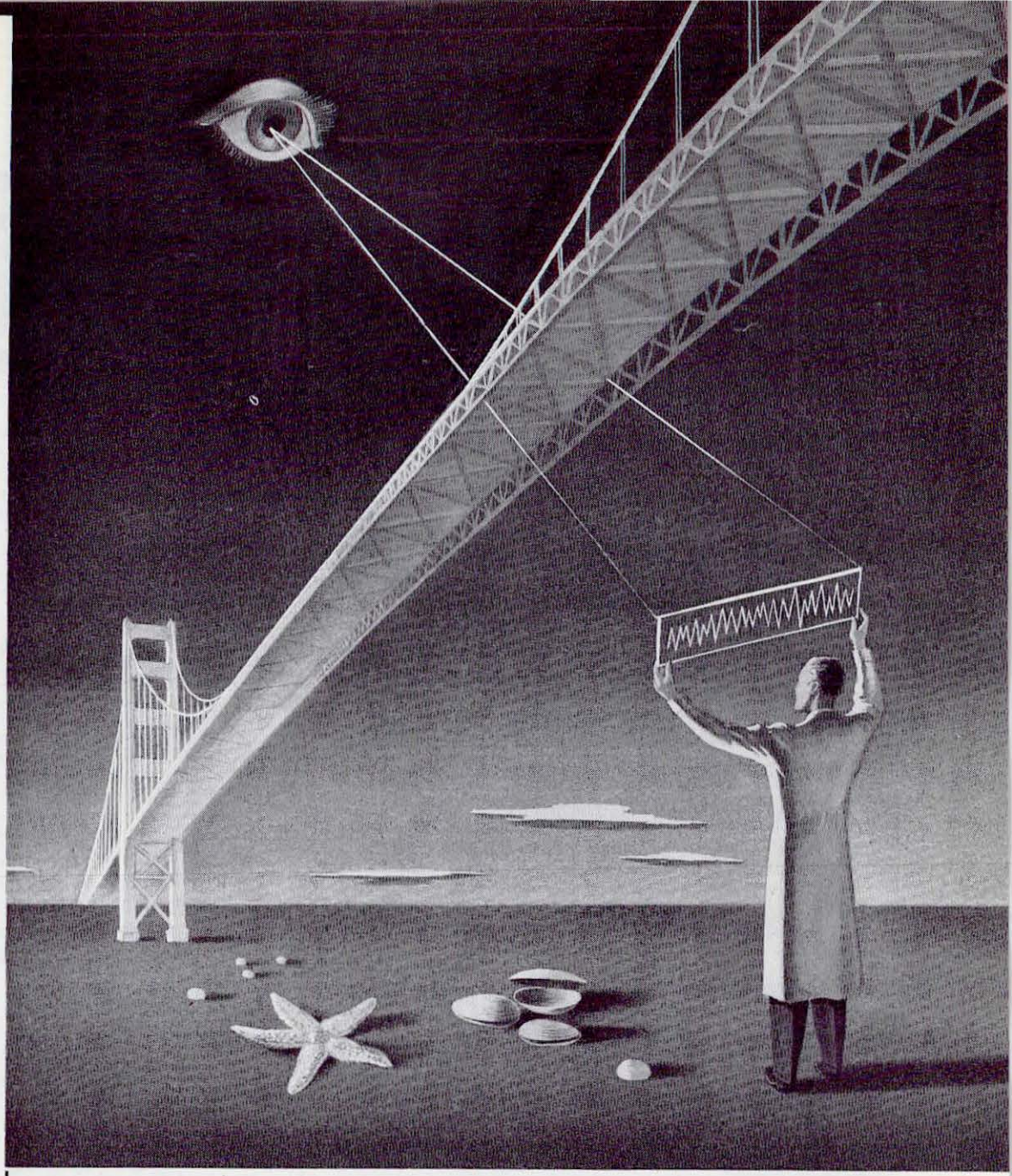
Where strains occur in short-time intervals, amplifiers are required to "step-up" or amplify the output of electric gages. The nature of the strain and type of gage govern the choice of amplifiers.

An oscillograph or recorder is necessary to obtain permanent records of strains. The Crystal pen and ink Oscillograph shown above is one of several available recorders.

Illustrations: Baldwin-Southwark; Brush Dev. Co.; General Electric; deForest.

* * *

Other testing equipment in the strain measuring group: Waugh Switching Unit to permit quick reading of several gages. Electrical Oscillator, 2000 cycles, for rapidly occurring stresses. Vibragraph for recording displacements. Bernhard Mechanical Oscillator for applying period forces.



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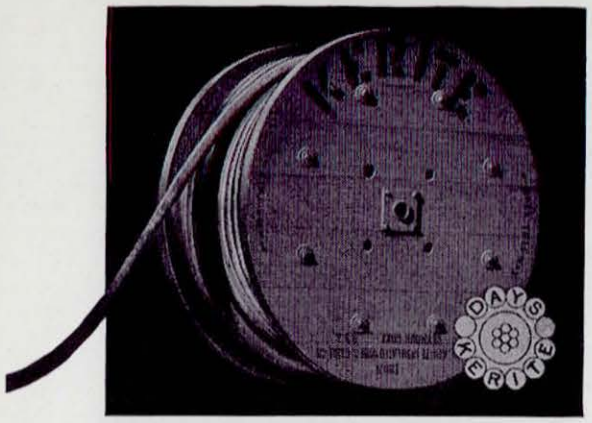

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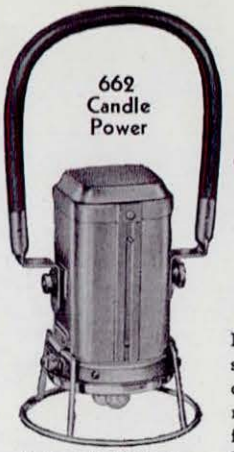

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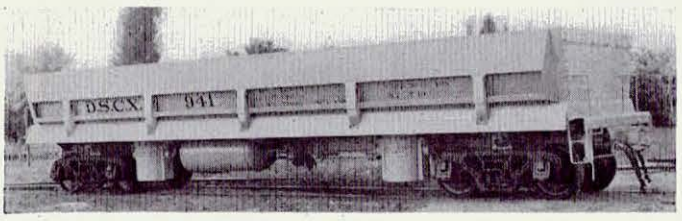

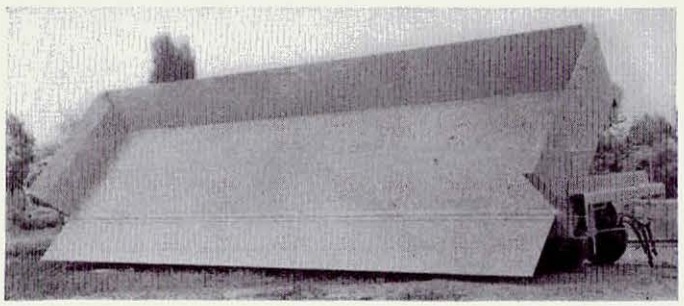

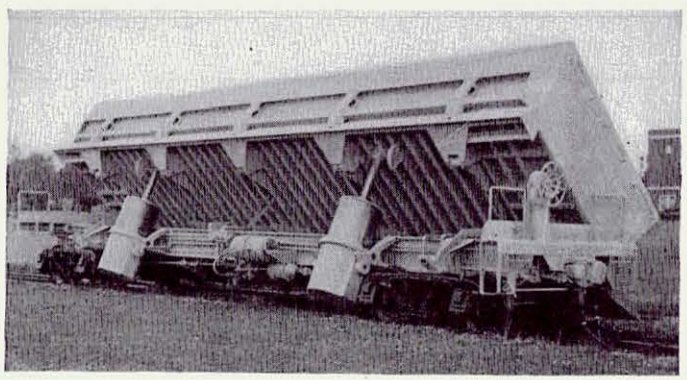

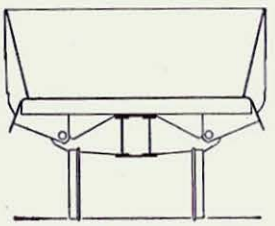

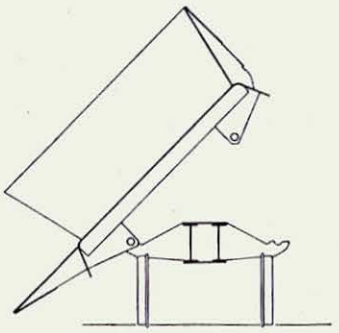

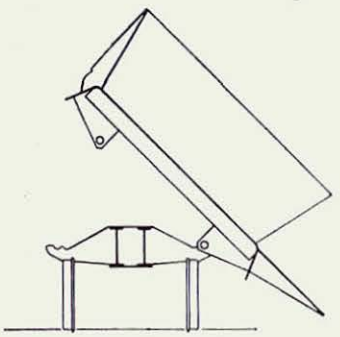

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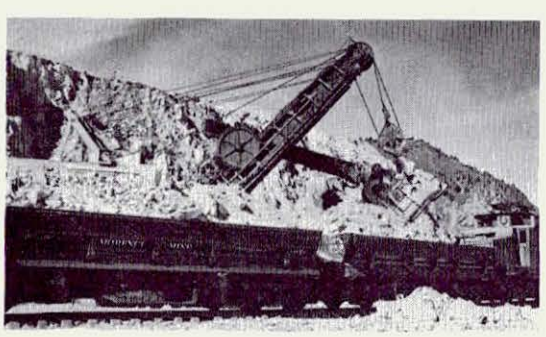

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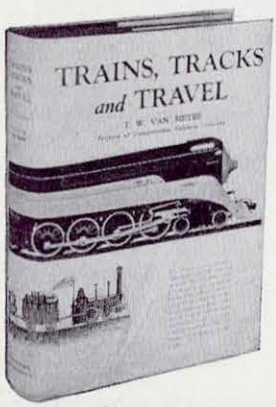
TRAINS, TRACKS AND TRAVEL

By T. W. VAN METRE

Professor of Transportation, Columbia University



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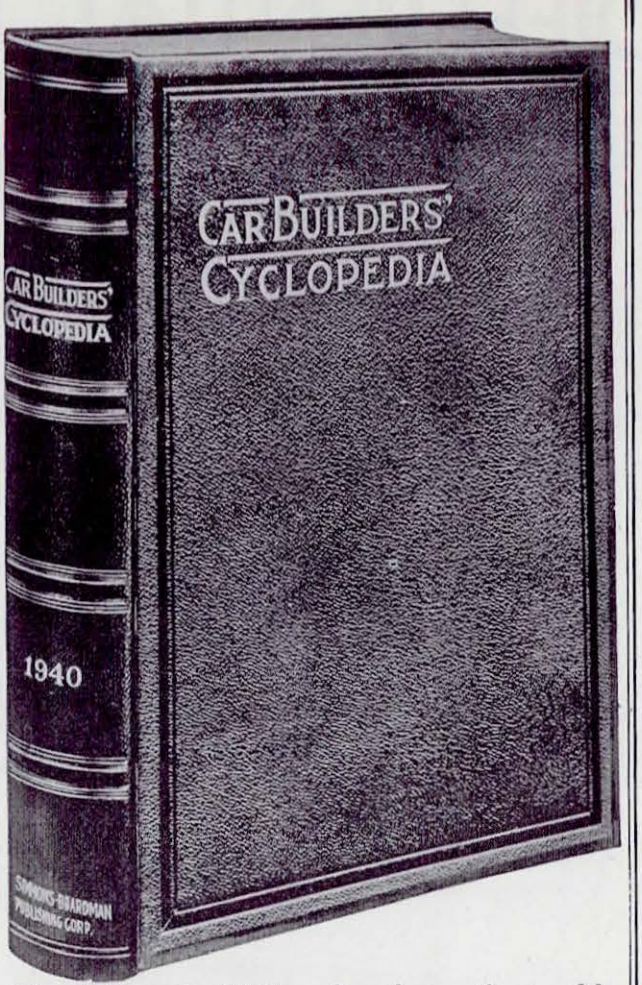

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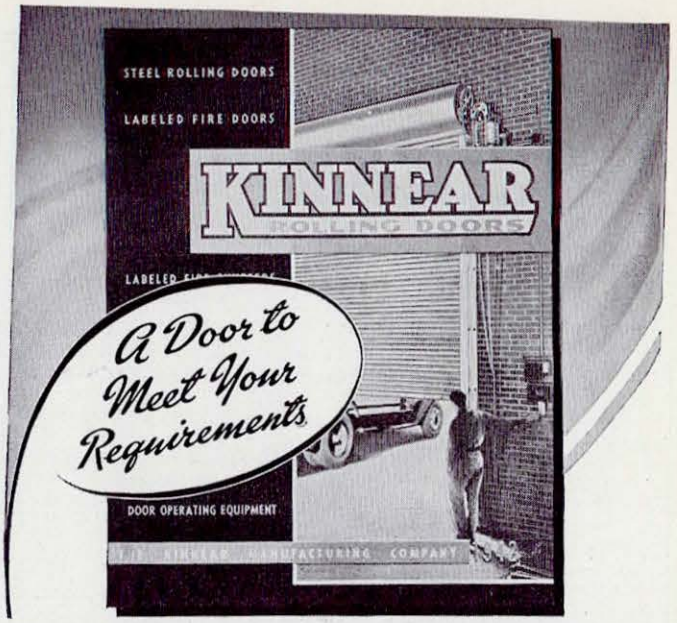

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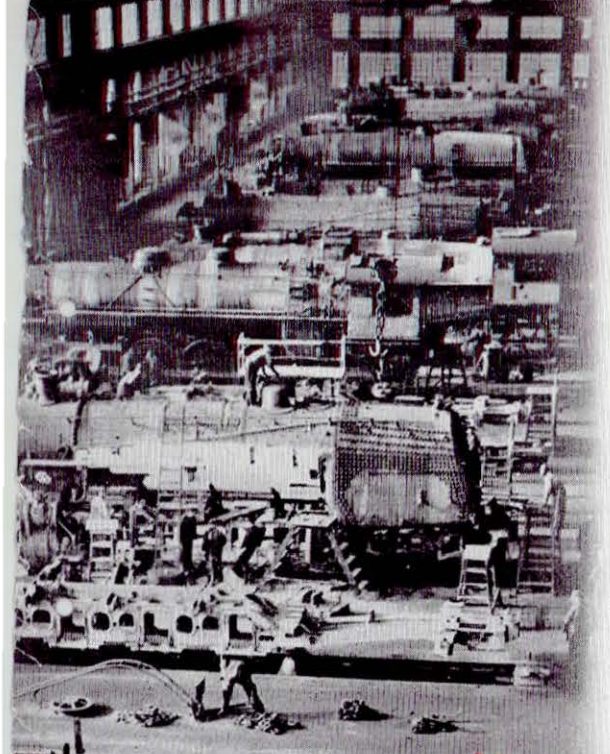

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